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Skeptical Inquirer

THE MAGAZINE FOR SCIENCE AND REASON

Vol. 45 No. 3 | May/June 2021

How to Repair the American Mind

Guy P. Harrison

Life, the Quniverse, and Everything Part 2
Down with Science—but Why?
Bias in Alt-Med Research
Aromatherapy
Creationist Funhouse: God the Biotechnologist

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The Skeptical Inquirer (ISSN 0194-6730) is published bimonthly by the Center for Inquiry in association with the Committee for Skeptical Inquiry, P.O. Box 703, Amherst, NY 14226. Printed in U.S.A. Periodicals postage paid at Buffalo, NY, and at additional mailing offices. Subscription prices: one year (six issues), $35; two years, $60; three years, $84; single issue, $5.99. Canadian and foreign orders: Payment in U.S. funds drawn on a U.S. bank must accompany orders; please add US$10 per year for shipping. Canadian and foreign customers are encouraged to use Visa or Master Card.

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[FROM THE EDITOR

Science, Values, and Muddled Thinking

Our three lead articles continue examining our current crisis in America. Evident throughout the tumultuous year of 2020 and early 2021, from our skeptics' viewpoint we see far too many people unable (or unwilling) to separate fantasy from reality, see through obvious conspiracy theories, and make decisions based on evidence rather than emotion.

In our cover article "How to Repair the American Mind," Guy P. Harrison offers his lessons from "such an extraordinarily eventful year" in which "irrational beliefs have reached crisis levels in America." The common thread he sees is lack of critical thinking. "The reason our problem of mass delusions and rampant disinformation can exist to the degree it currently does is because too many American minds are incapable of handling close encounters of the irrational kind," he says, noting that the key problem is too many people are believers rather than thinkers. He urges we focus not on the few who sell lies and fantasies but "the many who eagerly buy them." Harrison, who has written thoughtful books on this very subject, notes that critical thinking can be taught and argues it should be taught in our schools at all levels. He emphasizes that critical thinking, far from being elitist and intellectual, is open to anyone, at any age—it is in fact the ultimate populist, democratizing activity.

In part two of her examination of QAnon, Stephanie Kemmerer looks even deeper into the dark recesses of that attractor of conspiratorial ideas, no matter how unhinged and crazy. Some QAnon followers may have had their worldview shocked when their disinformation-fueled beliefs about the election failed to materialize, but the movement is still dangerous and is not going away, Kemmerer says. We again commend her for her insightful reporting. And in "Down with Science—but Why?" Peter Lantos laments an increasing tendency to distrust and even reject science and its institutions. He stresses the many strands of thought that lead people to science denial, including politics, religion, and vested interests. Trying to understand their positions is the first step.

Now I want to offer some cautionary, even contradictory, thoughts about such matters. They come courtesy of Stephen Hilgartner, J. Benjamin Hurlbut, and Sheila Jasanoff in a recent Policy Forum article in *Science* (February 26). They see the current antiscience movement as legitimate "dissent" and say that labeling it "antiscience" is bad social science and bad politics. "What looks like an attack on science may simply be the pursuit of politics by other means," they write. "The division is not between those who march for science and those who march against science. It is between competing understandings of how to balance collective responsibility and individual liberty." Further, "In America, factual controversies in policy contexts are less about the credibility of the science than they are proxies for disagreements about competing ways of life. … The 'antiscience' label conflates normative dissent about which values matter with epistemic dissent on matters of fact." It is a sobering cautionary note for we pro-science skeptics who exalt evidence, facts, and science above all. I appreciate what Hilgartner and colleagues are saying—competing values are what are often really at play in such discussions—and we all need to better understand that. But I nevertheless argue that scientific thinking is a high value in itself and that selective repudiation of inconvenient scientific findings is a deplorable impulse even if the intent is not to denigrate the science but to reinforce one's personal values.

—Kendrick Frazier

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Making Conspiracy Theories Cost: When Consequences Follow

Benjamin Radford

Skeptics and folklorists know that conspiracy theories are a dime a dozen. For every high-profile one you can think of—from Roswell alien bodies to moon-landing hoaxes—there are hundreds of lesser-known ones. And more are cranked out all the time. Conspiracy theories rise and fall in popularity, but—like unsinkable rubber ducks—they never really go away. Because they are rarely if ever disproven, there's an ever-growing number of them. And though they've circulated for thousands of years, they've exploded in number, variety, and virulence in the age of social media.

Conspiracy theories persist partly because they benefit those who tell them in some way. And because they often demonize others, they are baked into religious, cultural, and political agendas. They can be dangerous—even deadly—but those who share them typically are not harmed by them (except perhaps indirectly), and they cost relatively little in social capital. Many conspiracy theories have no inherent named implementor, no specific single person blamed for some action. Instead, it's a shadowy, inchoate cabal of nameless conspirators, such as the Illuminati or Satanists. Other times conspiracy theories are ascribed to specific people—typically rich and powerful men, such as Bill Gates and George Soros.

Conspiracy theories persist partly because they benefit those who tell them in some way.

While most conspiracy claims are shielded by the First Amendment as protected free speech (a defense often proffered by Alex Jones and his ilk), some are potentially libelous—and that's where legal consequences come into the picture. If you say something that you know is false or made with willful disregard for its truth and then it harms the reputation of a person or entity, you can be held legally liable for damages.

A January 14, 2021, article in *Fortune* by Ryan Young argued for conspiracy theories to be viewed through an economic prism:

> If you think of irrationality as a consumer good, much like a car or a television, you can better understand why people sometimes say and do crazy things. Think of it like this: People buy more cars and televisions when they are cheap, and fewer when they are expensive. This logic applies to conspiracy theories. Here, price is not necessarily measured in money. The "price" of armchair theorizing is low, usually. It costs almost nothing to post crazy things online, aside from mild social stigma. But this cost is more than offset by other benefits for many. For a lot of fringe figures like anti-vaxxers, flat-earthers, and QAnon conspiracy theorists, espousing an extreme belief is not necessarily about the truth.

However, in recent years—and more so in recent months—it has become clear that conspiracy theories can be expensive. Here are a few examples.

• Smartmatic, an election technology company, filed a $2.7 billion defamation lawsuit against both Fox News as a corporation and several of its news hosts for repeatedly and without basis falsely accusing it of rigging the election for Joe Biden over former President Donald Trump. The false conspiracies, the company claimed, cost the company millions of dollars. Smartmatic issued a statement saying, in part, "Fox

is responsible for this disinformation campaign, which has damaged democracy worldwide and irreparably harmed Smartmatic and other stakeholders who contribute to modern elections."

According to a February 4, 2021, article in the *Washington Post*:

> The company said it has identified "100 false statements and implications" about Smartmatic and its services made on Fox's programs. The lawsuit singles out Fox News and Fox Business Network hosts Maria Bartiromo, Lou Dobbs, and Jeanine Pirro, as well as two guests who repeatedly appeared on their shows in the weeks around the election: Trump-affiliated lawyers Sidney Powell and Rudolph W. Giuliani. Smartmatic said in the lawsuit that the company performed work in only one county during November's election, helping officials in Los Angeles implement a pandemic-safe voting system. The alleged smear campaign nevertheless succeeded in making Smartmatic "known by voters in the United States and abroad as a criminal that stole the 2020 U.S. election," leading to the loss of business partners, strained client relationships and an estimated loss of more than $500 million in future profits, according to the complaint.

Fox canceled *Lou Dobbs Tonight* the day after the lawsuit naming the host was filed. The *Washington Post* reported that the suit "cited several examples of Dobbs promoting baseless claims of voter fraud, including a November 12 episode in which former President Donald Trump's personal attorney Rudolph W. Giuliani claimed that Smartmatic was founded by Venezuelans close to former dictator Hugo Chávez 'in order to fix elections.' Dobbs thanked Giuliani for being 'on the case,' which the host said 'has the feeling of a coverup in certain places.'" (Right-wing network Newsmax, which was threatened with lawsuits over false statements of election fraud, backed off its claims and even cut off Trump-supporting MyPillow founder Mike Lindell during an interview rant, causing one of the hosts to walk off the set when Lindell wouldn't stop spewing conspiracies that could get the network sued.)

• On February 3, the House of Representatives removed conspiracy monger and QAnon proponent (and newly elected Georgia Representative) Marjorie Taylor Greene from two congressional committees, Education and Budget. Greene repeatedly—and unapologetically—endorsed debunked misinformation and conspiracy theories, as well as racist views and even a threat to others in government.

• No modern politician has so successfully and routinely employed conspiracy theories as Trump, who even appeared on the Alex Jones show. Jones, of course, repeatedly claimed that the Obama administration faked domestic shootings (including the Sandy Hook school massacre—over which Jones eventually lost a $100,000 defamation lawsuit in 2019) as a pretext for confiscating American's guns.

Though Trump often benefited from trading in conspiracies, they also ended up costing him a legal team. Five members of Trump's original team slated to defend him resigned just days before his second impeachment trial. Why? Because Trump's insistence that they endorse disproven claims of election fraud put the lawyers' own legal careers in jeopardy. Lawyers are required to represent their clients to the best of their ability, but they can be disbarred if they present information to a court they believe, or have good reason to believe, is false. Trump's election-theft conspiracies wilted at the courtroom doors for months, and his lawyers were well aware of that. His legal team was prepared to mount a defense on other grounds, but not the one Trump wanted. So they quit *en masse* and were replaced a few days later with a new team—one that was universally criticized for being disorganized and of dubious competence.

Holding people responsible for false claims is of course a chief occupation of skeptics, investigators, journalists, and others. The legal system is being more widely recognized as a useful tool for helping refute some of the most blatant and egregious of them. When the cost of conspiracy mongering rises and results in real consequences, those who share them may think twice.

Benjamin Radford is the deputy editor of the Skeptical Inquirer.

Skeptical Inquirer Presents Series a Big Success; Fills CSICon Gap

Barry Karr

Another month passes by, and it seems another month is lost to the COVID-19 pandemic. I know many of us have used our time away from the normal world wisely. We've cleaned out every one our closets, found all our hidden childhood toys in the attic, rekindled our love affair with our pets, and watched in horror as the events of January 6 transpired. Additionally, I know thousands of you have tuned in (or Zoomed in) to the CSI lecture series Skeptical Inquirer Presents. It's almost hard to believe that we are now eight months into the series.

We could not hold our CSICon conference in Las Vegas in October 2020 because of the pandemic, of course, so we started this lecture series to bring a little bit of CSICon to you. We started out featuring several speakers who were scheduled to take part in CSICon 2020, but it is interesting how it has morphed into something larger.

When I am looking for speakers, I now find myself thinking in the back of my mind: I want people to tell me (us) what the heck is going on! Why are so many people against life-saving vaccinations? How did we get to the point where American citizens felt compelled to storm the Capitol? For the series, for the most part, we've been focused on conspiracy theories, countering anti-vaxxers, cognitive dissonance, medical myths, science denial, the Infodemic, QAnon, and related topics. I guess the overall theme we've been dealing with, in a broad sense, is Misinformation: Why People Fall for It and How to Combat It.

Over the past few months, we've brought you lectures, discussions, and a chance to ask questions of such speakers as:

- Joseph Uscinski on "Coronavirus Conspiracy Theories"
- Paul Offit on "Developing a SARS-CoV-2 Vaccine: Is Warp Speed Too Fast?"
- Carol Tavris on "The Role of Cognitive Dissonance in the Pandemic"
- Seema Yasmin on "Viral BS: Medical Myths and Why We Fall For Them"
- Nathan Lents on "Evolution Only Breaks Things: Science Denial at the Heart of Intelligent Design"
- Sasha Sagan on "Rituals for Nonbelievers"
- John V. Petrocelli on "Persuasive Bullshitters and the Insidious Bullshit Hypothesis"
- Bob Nygaard on "Combating Fortunetelling Fraud (aka Psychic Fraud)"
- Sean B. Carroll on "A Series of Fortunate Events: Chance and the Making of the Planet, Life, and You"
- Timothy Caulfield on "The Infodemic: Battle Does Bunk Work (Let's Get To It!)"
- Odaelys Walwyn-Pollard on "Disparities in the Midst of COVID-19: Education, Health, and Race"
- Maria Konnikova on "The Biggest Bluff: How I Learned to Pay Attention, Master Myself, and Win"
- Michael Mann on "The New Climate War: The Fight to Take Back Our Planet"

We just completed our largest talk so far (around 1,200 of your fellow skeptics) with Stephanie Kemmerer on "QAnon: Blood Libel for the Digital Age." (Kemmerer is author of SI's two-part series on QAnon.)

Upcoming talks include:

- Paul Offit on "SARS-CoV-2 Vaccines: Where Do We Stand?"
- Andrew Norman on "Mental Immunity: Infectious Ideas, Mind Parasites, and the Search for a Better Way to Think"
- John Cook on "Gamification to Counter Science Misinformation?"

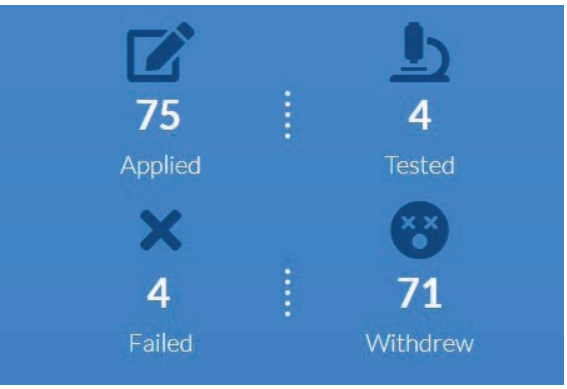
Each event is hosted by Leighann Lord, stand-up comedian, cohost of the CFI podcast *Point of Inquiry*, and so much more. (You should check out her website at veryfunnylady.com.)

Check out the dates of our upcoming events at skepticalinquirer.org and come join a thousand or so of your skeptical friends for the next Skeptical Inquirer Presents.

Barry Karr is executive director of the Center for Inquiry as well as organizer of Skeptical Inquirer Presents and past and future CSICon conferences.

$250,000 Remains Unclaimed: CFI Investigators Recount a Year of Applicants

Lou Hillman and James Underdown



The Center for Inquiry Investigations Group (CFIIG) currently administers the world's largest active paranormal challenge at $250,000 (the James Randi Education Foundation $1 Million Challenge has been dormant for years). Many dozens of people apply for this prize every year. This requires quite a bit of work on the part of the CFIIG's first responder team, which fields the initial inquiries and guides the challenger toward being tested. Here is a summary of our testing work in 2020.

From January 1 to December 31, 2020, we received seventy-five formal challenge submissions and many other phone calls and inquiries. We believe the COVID-19 epidemic slowed our usual traffic a bit. However, 2021 will be a totally different story. Since an article on the Challenge appeared on Medium's OneZero on February 24, we've gotten over 100 new applications.

Applicants are often not very clear about what exactly they can do or what the claim entails, so categorizing the claims is sometimes difficult. With that caveat, the claims fell roughly into these categories: clairvoyance (five applicants); energy (five applicants); entities/spirits/ghosts (six applicants); psychic/medium (five applicants); telekinesis (eight applicants); telepathy (sixteen applicants); numerology (three applicants); miracles (three applicants); unclear (twelve applicants); various (twelve applicants).

Several claims, including those that involved possible physical harm to either the challenger or others, were rejected immediately due to CFIIG policies. For instance, the German challenger who claimed to be able to (mentally) deflect a bullet shot directly at someone was told she must find a less deadly means of demonstrating her powers. The challenger who claimed to be able to stop another person's heart did not strike fear into us but was denied under the same "do no harm" policy. We also denied the challenger who wanted to be paid just to be tested.

Other challengers, particularly those claiming to be "psychic mediums," apparently did not understand that *telling* us they had contacted dead people did not qualify as proof of ability. Others claimed to have correctly made very general predictions of events that were not tied to specific times or places. For example, one person claimed that an earthquake would happen sometime during 2020 at some place on the East Coast of the United States. There *was* an earthquake in New Jersey, and though the event was somewhat unusual, the challenger's prediction was not specific, and so not impressive in any way.

Others did not understand that their (apparent) hallucinations, personal experiences, or pareidolia were not objective evidence of what they claimed. Similarly, videos that showed "orbs" don't mean that there was a ghost in the room. Dust on a camera lens, reflections from objects, etc., can produce similar effects. Though we are often interested to see what leads people to believe they are having a paranormal experience, we do not accept photo or video evidence as proof toward our quarter-million-dollar prize.

By the end of the year, seventy-two claims had been assigned to CFIIG investigators/first responders; of those, negotiations on four led to demonstrations. All are described at https://cfiig.org/investigations/. These included one claim of telepathy, one of the ability to determine if a person was alive or dead by viewing a photograph, and one of teleportation and telekinesis.

One claim on that page did not actually lead to a demonstration but is nevertheless instructive in showing how people can misinterpret what they experience. The challenger claimed to be able to cause a top to spin in a manner that standard physical theory suggests is impossible. After much discussion and work among ourselves, we found two physicists who looked at the challenger's videos. The physicists determined that what he was claiming was perfectly explainable by Newtonian mechanics. The challenger, unfortunately, refused to accept this and probably still believes that we somehow cheated him out of the prize.

So what happened to the claims that weren't immediately rejected or that led to failed demonstrations? In most cases, the challenger did not respond to the first email from a first responder within a reasonable amount of time, which led to the challenge being closed. In others, our standard suggestion for the challenger to perform a self-test was also met with silence—or maybe led to failure. These applications were also closed. It should be noted that it is rare for challengers to actually conduct a self-test and conclude that their abilities are not real. We're usually happy to test them in person.

Lou Hillman is challenge coordinator for the Center for Inquiry Investigations Group. James Underdown is the founder and chair of the CFIIG.

Phosphine Detected on Venus? We Still Don't Know

David W. Ball

A team of scientists from the United Kingdom and the United States recently announced the detection of phosphine, PH_3, in the upper atmosphere of Venus, the second planet in our solar system ("Phosphine Gas in the Cloud Decks of Venus," by Jane S. Greaves et al. *Nature Astronomy* [2020]; https://www.nature.com/articles/s41550-020-1174-4). Using millimeter spectroscopy, a common astronomical technique used to detect molecules, the authors presented a case for the presence of the phosphorus-containing molecule in the cloud decks, about fifty-six kilometers above the surface. To confirm its detection, the astronomers verified their ability to detect water and sulfur dioxide (SO_2), the latter of which has a signal (at 267.5375 GHz or 1.121 mm) very close to that of PH_3 (266.9445 GHz or 1.123 mm). Their data analysis indicated that the new signal was definitely not SO_2, and they concluded that phosphine was the only plausible source of the signal. They estimate a concentration of about twenty parts per billion.

Why is this noteworthy? Because on Earth the *only* natural sources of PH_3 are biological, most likely from the anaerobic decomposition of phosphates in decaying organic (that is, related to life) matter. Phosphine is not stable for very long in an atmosphere that contains oxygen gas, so it would have to be constantly produced at low levels from decay of living organisms. There are no known geological or atmospheric sources for terrestrial phosphine.

Schrödinger's Phosphine?

Not so fast, say some other scientists. At least two other research groups have submitted manuscripts (available on arxiv.org) contesting the conclusion that the signal was phosphine—or that there was any signal in the first place. Both groups, one American and one European, used the same publicly available dataset as the original researchers but subjected them to different calibration and baseline corrections. These corrections, usually in the form of a mathematical equation that can digitally "erase" part of the detected signal, are necessary because the raw data from experimental light sources—in this case, Venus—is always messy with background noise, especially when the data is more detailed, that is, when the data has a higher *resolution*. Calibration and baseline corrections work to minimize the background noise and allow researchers to detect a true signal. It's the same as using noise-reducing headphones to remove the annoying *hiss* when listening to an audio program.

At least two other research groups have contested the conclusion that the signal was phosphine—or that there was any signal in the first place.

In both cases, the research groups claim that if a different background correction was applied, the claimed signal from PH_3 disappears—or is more correctly identified as SO_2. In addition, both research groups used a *simpler* background correction, with one group arguing that the background correction used in the original paper added more detail to the signal, leading the researchers to claim a signal that was not there. One researcher recalled a quote attributed to John von Neumann, a well-known mathematician and computer scientist: "With four parameters I can fit an elephant, and with five I can make him wiggle his trunk." The original researchers used twelve parameters, and the new critics argue that this was unnecessarily complex and led to an incorrect conclusion.

Now What?

Well, is there or is there not phosphine—and maybe life—on Venus? Right now the answer is *we don't know*. The chemistry of Venus's atmosphere is not very well understood, in part because of the extreme difficulty of sending robotic missions to that planet. Venus has the most inhospitable conditions of any rocky planet in the inner solar system; with surface conditions of approximately 850°F and ninety-two atmospheres, it is even more extreme than Mercury, which is half the distance from the Sun. Of several landers that have been sent to Venus, the longest-lived was the Soviet probe *Venera 14*, which landed on the surface in 1982 and lasted 127 minutes before losing contact.

Right now we are limited to exploring the nature of our closest planetary neighbor by analyzing the light it reflects or emits, with the Sun sometimes getting in the way. As this research shows, it's not easy. But to those who argue that this is another example of science not making up its mind (a common trope of the antiscience crowd), the reality is that *this is how science works*. To paraphrase a well-known Starfleet captain, science is a crucible in which we burn away all irrelevancy until what is left is the truth. What we see here is science happening before our very eyes, and it's a wonderful show.

David W. Ball has just retired as a professor of chemistry from Cleveland State University in Ohio.

Physicist C.S. Wu Honored with U.S. Postage Stamp

Kendrick Frazier

Courtesy of the United States Postal Service website

Chinese American experimental physicist Chien-Shiung Wu was honored with a postage stamp issued by the U.S. Postal Service in virtual ceremonies on February 11, 2021. Wu, who came to the United States in 1936 to do graduate work, received her doctorate at UC Berkeley (under E.O. Lawrence and Emilio Segrè), and spent most of her career at Columbia University. She was a world authority on beta decay, coauthoring the standard reference work on the topic, and was known for her experimental prowess.

She worked on the Manhattan Project during World War II in the laboratories of Harold Urey in the gaseous diffusion (K-25) program for uranium enrichment. She became a U.S. citizen in 1954 and a full professor at Columbia in 1958.

Wu proposed and carried out the experiment necessary for theoretical physicists T-D Lee and C.N. Yang to demonstrate that the law of conservation of parity was invalid under weak nuclear interactions. This discovery of parity violation was a major contribution to particle physics and the development of the Standard Model.

Wu was known for her experimental prowess.

In his classic book *The Ambidextrous Universe* (first published in 1964), Martin Gardner noted that at the time Wu was already considered one of the world's leading physicists and respected for the "care and elegance for which her experiments were always designed," and he referred to this specific experiment of hers as "revolutionary" (Gardner 1979, 203–204). "Everybody expected Madam Wu to find a left-right symmetry in the process of beta-decay. Nature sprang a surprise." Gardner compared her discovery to the Michelson-Morley experiment that paved the way for Einstein's theory of relativity. The results of both were great surprises. "Madam Wu's experiment may well prove to be equally historic" (Gardner 1979, 207–208).

Lee and Yang were awarded the Nobel Prize for Physics in 1957, but Wu's role in the discovery was not publicly honored until 1978, when she was awarded the inaugural Wolf Prize in Physics.

Wu was the first living scientist to have an asteroid named after her.

Another important experiment of Wu's was the first experimental confirmation of quantum results relevant to a pair of entangled photons as applicable to the Einstein-Podolsky-Rosen (EPR) paradox.

Columbia University physicist Chien-Shiung Wu at work in her laboratory

She was a member of the National Academy of Sciences, a 1975 recipient of the National Medal of Science, a recipient of many other awards and medals, and was the first living scientist to have an asteroid named after her (in 1990).

In 1975, she became the first woman elected president of the American Physical Society. She was a determined advocate for women in science, becoming more outspoken late in her career.

Wu retired from Columbia in 1997, becoming a professor emerita, and died in New York City at the age of eighty-four.

Columbia physics professor Brian Greene and Wu's daughter spoke at the ceremonies announcing the commemorative postage stamp. It is a Forever stamp always equal in value to current first-class-mail one-ounce postage.

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Kendrick Frazier is the editor of the Skeptical Inquirer.

Randi Remembrance

Arthur S. Reber

The January/February 2021 issue of SI was dedicated to the memory of James Randi, every skeptic's hero. There was a request for Randi stories; here's mine.

First, the backstory: Randi was part of a panel the Eastern Psychological Association had put together to look at parapsychology in 1980. After the various presentations were over, Randi did a few tricks for us. A young woman took to the floor microphone and stated that she thought the presentations were rather one-sided. She said that she was completing her PhD at the City University of New York under Gertrude Schmeidler and asked if she could have some time to tell them what she'd found. This is the point where my ears went up, as I was on the faculty of the Brooklyn Campus and the Graduate Center of CUNY. Schmeidler was a full professor at the City campus known for her research in social and clinical psychology.

Image Copyright Deyvi Orangel Peña Arteaga

At the time, I did not know about her work in psi.

Randi said to her, "Of course you may. Take the time you need," which, of course, was typical of him. She proceeded to describe the study, which looked at telepathy in children and found what Schmeidler had dubbed the "sheep-goat" effect—her effort to explain why large-sample studies always seemed to come out at chance. When she finished, the panelists asked some questions, and she responded politely and effectively. Afterward, an old friend who was on the panel introduced me to Randi, who said, "Get in touch if there's anything I can do for you," and gave me his phone number.

When I got home, I told my wife, who was also completing her PhD at CUNY, about this session. "Oh," she laughed. "I know her. She was in our dissertation seminar last semester. That study, by the way, is fatally flawed. It took us a good half hour to find the procedural gaffe, but it virtually guarantees getting a false 'sheep-goat' outcome."

"What happened then?" I asked. "Oh, when she realized what was happening, she got angry, upset, insulted us, and started crying. So we just backed off and went on to someone else's research."

"Now *that* is fascinating," I said. "Four months ago, she discovered that the research methodology was flawed and the data useless … and there she was, confidently presenting her findings as though they were valid." That was the day I decided to propose a new course titled Parapsychology: A Critical Examination. I taught it every year from 1981 until my retirement in 2005. It is still offered regularly by other faculty.

That brings me to Randi. I called him up (this was when he lived in New Jersey), told him about the flaws in the student's study and how the session inspired me to introduce the new course. "Excellent," he said. "Would you like me to come out to Brooklyn and be a 'guest lecturer'?" I replied, "Yes, of course," astonished that he would do this for someone he'd only met once. And he did, and he was, well, "amazing." He wouldn't do magic, though. He always said he was there for the science. But at lunch later, magic was never far away. On one of his visits, our daughter—who was in her early teens then—joined us. Predictably, her wristwatch ended up on Randi's wrist and the salt shaker in her zipped-up purse. I watched, seeing if I could catch the swindle-moment. Nope. He was the master at distraction, and it was always done so you didn't realize you were being manipulated.

Randi wouldn't do magic, though. He always said he was there for the science. But at lunch later, magic was never far away.

As his fame grew, his time became more precious, and he said he had to "bail out" on the Brooklyn visits. I understood. I, for one, am ever grateful for his generosity with his time and his genius, and I still do not understand how you can take someone's wristwatch off without them realizing it.

Arthur S. Reber is Broeklundian Professor Emeritus of Psychology at Brooklyn College and the Graduate Center of CUNY. He coauthored, with James E. Alcock, "Why Parapsychology Claims Can't Be True" in our July/August 2019 issue.

Chris Fix and his wife, Tricia

In Memoriam: Chris Fix, Our Former Art Director

The entire Skeptical Inquirer family mourns the loss of former Art Director Christopher S. Fix, who died of pancreatic cancer March 6 in Amherst, New York. He was only fifty-one. Chris joined our production staff in 2002 and became art director in 2008. Beginning with our January/February 2009 issue and ending with our May/June 2020 issue, when he had to step down due to his illness, Chris designed every Skeptical Inquirer cover and designed and laid out our inside pages, including selection of most art and illustrations. He did the same for our sister magazine, *Free Inquiry*, and also designed promotional materials for our combined Center for Inquiry organization. A Buffalo native and graphics designer, Chris's working style was calm, quiet, professional. He leaves his parents, Norman and Dorothy Fix; his wife, Tricia; daughters, Samantha and Ava; and son, John. Our hearts go out to his family. We will miss him.

—The Editors

CSICon 2021 Canceled, CSICon 2022 to Be the Best Conference Yet

Barry Karr

I am sorry to report that the decision has been made to cancel CSICon again this year. Although recently the news has become somewhat encouraging regarding the pandemic—vaccinations are up, and infections seems to be trending lower—it is just too uncertain as to when things will be safe again for people to travel and gather in large convention rooms and meeting areas. There are too many questions that have no answers yet for us to continue to move forward with the large amount of background work that would need to be done before October rolls around.

Plans are now underway to make CSICon 2022 the best CSICon conference ever. We have invited all our projected 2021 speakers to come in 2022, including Neil deGrasse Tyson, Penn & Teller, Richard Dawkins, Piff the Magic Dragon, and a host of others. We will work hard to bring them all in 2022. We also have reason to think we will have a few extra surprises as well. We will be updating information regarding scheduling and registrations on a regular basis.

The conference will be held at the Flamingo Hotel and Resort, October 20–23, 2022, which gives us a wonderful opportunity to bring back our Flamingo mascots (who were not happy having been put to work guarding our Coronavirus sanitizer stash).

Please stay safe and be well. We look forward to seeing you soon at CSICon 2022!

Barry Karr is the executive director of the Committee for Skeptical Inquiry.

[INVESTIGATIVE FILES JOE NICKELL

Joe Nickell, PhD, did doctoral work in literary investigation and folklore at the University of Kentucky. He is CSI's senior research fellow.

The Wyoming Death Ship: Truth Be Told

Ghost ships are said to be "sufficiently abundant" in certain locales as "to make them a hazard to navigation" (Beck 1973, 395). Some—seen in storms or fog—are probably mirages. (For example, a fiery, phantom-ship mystery I investigated in Nova Scotia was solved by witnesses who cited fog in front of the moon coming over the horizon, causing it to appear like a ship in flames [Nickell 2012, 172–173].) The phantom ships are almost always purposeful—"usually to serve as a forerunner to warn or prepare those who see it for dire events" (Beck 1973, 395–396).

Such a vessel—known as "Wyoming's Ship of Death" (Riccio 1991) and "Platte River Ship of Death" (Rizzo 2013)—is described in numerous accounts, the earliest known having been in the premiere issue of *Fate* magazine in an article by Vincent Gaddis (1948). But was that "phantom ship of the Platte" truly a thrice-documented paranormal phenomenon or instead a work of fiction? Here are the facts.

The Story Told

Haunted Places: The National Directory (Hauck 1996, 462) summarizes the three alleged personal accounts presented by Gaddis, but it makes some errors and important omissions, so here is my own capsule version.

In each tale, a man encounters a spectral ship covered in ice on the Platte River. On deck is a crew of ghostly sailors who, at the command of their captain, lower a sheet of canvas to reveal—before the vessel vanishes—a corpse. In each case, it is that of someone beloved of the witness who subsequently learns that he or she has died that very afternoon. First, in 1862, an Indian scout named Leon Webber saw his dead fiancée. Next, in 1887, cattleman Gene Wilson was shown the "terribly burned" face of a woman he nevertheless recognized as his wife. And finally, on November 20, 1903, homesteader Victor Heibe, who had been a witness for hired-gun Tom Horn at his murder trial in Cheyenne, saw the hanged body of his friend dangling from the crossarm of a gallows. Heibe had checked his watch, which read 3:15—the time of Horn's hanging, implies Gaddis (1948, 115, 128), on that very day!

Gaddis claims that these accounts were originally gathered by something called The Cheyenne Bureau of Psychological Research. The first two are quoted in their entirety (they are models of conciseness and colorful imagery) and are indicated as "(signed)" followed by the witness's name. The last is told in Gaddis's words except for brief quotes from the alleged witness who, it is indicated, had also made a signed statement. Gaddis (1948, 128) concludes:

> Perhaps it should be added that Mr. Heibe did not know that the phantom vessel had appeared twice before until he was asked by the bureau to file his own account of his weird experience.
>
> Three times the phantom ship of the Platte, under sail and coated with glittering ice, has emerged from out of the vasty deep. When will it again appear with its tale of gruesome tragedy?

Research on my behalf by CFI Libraries Director Tim Binga failed to turn up either the first or third witness, although Tom Horn was indeed hanged for the ambush-murder of fourteen-year-old Willie Nickell (yes, a distant relative of mine), having apparently been mistaken for his sheepherder father. (This was during the Wyoming "range wars," when Horn was hired gun for the "cattle barons" [Ball 2014].) The second witness shows up on the 1900 U.S. census for Wyoming as Eugene Wilson, age thirty-five; he was "widowed," which is consistent with his wife having perished in the "autumn of 1887." But why did Wilson fail to give his wife's name or provide her death date as an essential fact?

Textual Evidence

Each of the three tales Gaddis provides is told in storybook fashion with the obvious intent of being spine-tinglingly mysterious, as shown by Webber's use of "apparition," "chilling," "Spectral Ship of Death"; Wilson's "set my nerves atingle," "strange vessel," "overcome with terror"; and Heibe's (in Gaddis's retelling) "phantom ship," "spellbound," and "scene of horror." Each tale ends with the ghostly ship vanishing followed by the dramatic revelation that the gruesome vision proved true, having occurred at that very time. However, real people's first-person accounts do not always end that way. Some finish with puzzlement as to what actually happened or give some philosophical or other response (see St. Aubyn with Hanbury 1996, 24–25, 31). In short, the Gaddis trilogy reads more like a single attempt to sell the supernatural than three separate accounts of actual experiences.

Various words and phrases in the three accounts seem unconvincing as the language of simple outdoorsmen (though not for Gaddis, whose use of the phrase "the vasty deep" shows he knew his Shakespeare [see *Henry IV, Part I*, act 3, scene 1]). Consider Webber's "to give vent to," "assumed the shape of," "the apparition," "standing in a circle of close formation," "covered with hoar-frost which glittered in the rays of the afternoon sun," and "the Spectral Ship of Death"; Wilson's "while gazing out upon the swiftly running water," "the man whom," "without a sign of animation," "frost-laden sailcloth," "what I surmised," "the frightfully scarred face," "my supposition is that"; and Heibe's (as related by Gaddis) "the vapory vessel," "a scene of horror on the phantom deck," and so on.

Moreover, the "three" men not only describe the respective scenes similarly, but they often use similar wording. For example, all refer to "a sailing vessel": "a sailing vessel of an ancient type" (Webber), "a full-rigged sailing vessel" (Wilson), and "the form of an ancient sailing vessel" (Gaddis paraphrasing Heibe). Then there is the piece of sailcloth: "a large square of canvas" (Webber), "a square of canvas" (Wilson), and "a large sheet of canvas" (Gaddis speaking for Heibe). Again, Webber refers to "a strange sight" and "the strange phenomenon," and Wilson speaks of "this strange vessel," while Gaddis speaks of Heibe's "weird experience."

Another stylistic similarity is found in the use of passive-voice constructions: for example, Webber says that he "was told"; Wilson states that "ship sounds were heard" and the "canvas was lowered"; and Gaddis (paraphrasing Heibe) also says the "canvas was lowered."

I decided to apply to the three texts a standard "readability formula," based on the length of independent clauses together with the number of polysyllabic words (Bovée and Thill 1989, 126). The levels for Webber, Wilson, and Gaddis/Heibe were, respectively, 10, 10, and 12—that is, the approximate education level, in years, each text would be placed at. These education labels would seem somewhat high for the Indian scout, cattleman, and homesteader but could be expected if all were written by Gaddis.

Other Revelations

Gaddis's little trilogy of tales—about the spectral ship emerging from mist and forecasting deaths that occur, distantly, at that very time—is not entirely unique. It obviously evokes Greek mythology's River Styx, which surrounds the underworld. Across it the aged boatman Charon ferried the souls of the dead. (In Gaddis [1948, 115] a voice tells the hanged man, Horn, "it is our duty to *ferry* you *across*"—emphasis added.) The three visions are akin to "dream clairvoyance"—in which a dream or vision of an event allegedly occurs simultaneously with the event (Guiley 1991, 112). For example, in an Edgar Allan Poe tale a mystic tells a man—regarding an out-of-body experience the latter has had—"that at the very period in which you fancied these things amid the hills I was engaged in detailing them upon paper here at home" (Poe [N.d.] 1975).

Quite often, a ghost anecdote is of this kind. A well-known example, told by a Judge Hornby, occurred in 1875. A

reporter had showed up unexpectedly one evening and, looking "deadly pale," insisted on taking advance notes of Hornby's impending judicial findings. The next day Hornby learned that the man had actually died at the time of the visit and that, although he had never left the house, *with his body was the notebook recording the judge's summary!* In fact, the judge's often-told but too-good-to-be-true story succumbed to investigation, and a bewildered Judge Hornby would later admit, "My vision must have followed the death (some three months) instead of synchronizing with it" (quoted in Hansel 1966, 186–189; see also Nickell 2012, 197).

Gaddis's trilogy does not hold up well either. For example, the detail, in Victor Heibe's alleged account, that his vision occurred at 3:15 on the afternoon of November 20, 1903, has only the day correct; Tom Horn was actually hanged at 11:08 a.m. and formally pronounced dead sixteen minutes later (Ball 2014, 421). The ploy of having Heibe glance at his watch—unaccountably, just before the death ship emerged from the fog—provides what fiction writers call *verisimilitude* (a semblance of truth). Another touch of verisimilitude is the claim that the three accounts were all signed witness statements collected by the Cheyenne Bureau of Psychological Research.

What is especially problematic is that Gaddis claims that all three accounts—the first, the second, and the third and last-known—came from this single source. But if the Cheyenne Bureau of Psychological Research never existed, then Gaddis is revealed as the creator. A search of books and internet sources (the latter conducted by CFI Libraries Director Tim Binga) failed to turn up any evidence that such a bureau ever existed except for sources that (admittedly or otherwise) derive from Gaddis.

Conclusions

Vincent H. Gaddis (1913–1997) is known to have written fictional stories in his early years (Fiction Mags Index N.d.), and "Wyoming's Ship of Death" is surely one of these. Its publication in the premiere 1948 issue of *Fate* is itself a clue. That pulp "true mysteries" type magazine did not—especially in its early years—make factual accuracy its most important concern. Ray Palmer, its copublisher (with Curtis Fuller) had previously edited the bestselling science fiction magazines *Amazing Stories* and *Fantastic Adventures* and was hugely involved in the early hyping of flying saucers, about which he once asked rhetorically, "What if I told you it was all a joke?" (Cohen 2001). Jerome Clark (1998, II: 404), a former editor of *Fate*, acknowledges that "Purely fictitious stories, some written by Palmer under various pseudonyms, appeared in the magazine." Gaddis's supernatural death-ship yarn was probably bought by Palmer with a wink and a nod.

That many have taken Gaddis's "Wyoming Ship of Death" at face value shows the credulity accorded the paranormal.

That many have taken Gaddis's "Wyoming Ship of Death" at face value shows the credulity accorded the paranormal, and it casts further doubt on Gaddis's "nonfiction" works as well. He went on to fame—or infamy—as the one who, according to writer John Keel (2001), "originated" the Bermuda Triangle "mystery" (Gaddis 1964; Gaddis 1965)—largely a contrived one, based on careless research and embellishments (Kusche 1975). He also helped promote belief in flying saucers, spontaneous human combustion, poltergeists, and the like (Gaddis 1967).

It is easy to see why a writer such as Gaddis would forsake fiction for the "unsolved mysteries" genre. He was spared having to constantly make up new stories when there were ghost, flying-saucer, and other such tales readily available. That those were supposedly true rather than fictional took care of the needed verisimilitude, and there was a ready public appetite and corresponding market for such spine-tingling tales. Gaddis, Frank Edwards, and their fellow mystery mongers borrowed from each other, rewriting the accounts as necessary without wasting time investigating their truth or falsehood. Of course, skeptics were frequently debunking the accounts—in whole or part—but avid readers either turned a deaf ear to them or simply moved on to the next batch of yarns. In fact, this process still continues. ·

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What Would Randi Do?

A few months after James Randi's passing, it still is not easy to talk about him. We have often heard and read about his extraordinary adventures and exploits: the unmasking of Peter Popoff, the Carlos Hoax, the Alpha Project, the Geller caper, the psychic surgeons of the Philippines, the "Water with Memory" affair, and so on. But Randi was so much more.

He was above all a person who cared a lot for others, especially the less fortunate. Generous and unselfish, he always had kind words for everyone and was always ready to offer concrete help, not just comforting words. I have copies of numerous letters from people all over the world who thank him for what he selflessly did for them.

His gestures of generosity and altruism were like pebbles capable of creating avalanches and having, directly or indirectly, concrete and positive effects on the lives of many people.

His stories of his life "on the road," when he was a magician in the United States and around the world, were exciting, but every now and then telling them made his voice crack. Like when he was lucky enough to listen to a concert by the great Nat King Cole in Buffalo, New York, and then was able to sneak backstage. Completely infatuated with Cole's extraordinary voice, Randi managed to shake his hand, express all his admiration, and exchange only a few words with that authentic legend of music before he was abruptly dismissed by some stagehand, because "It's not good that a white boy mixes with *colored* people."

Randi still got mad when he thought about certain things. In 1955, when he was already living in New York City, after moving from Canada where he was born, he was offered to work for eight weeks in Florida. "Well, you'll be in a fistfight before you've been there for forty-eight hours," his show business colleagues, with whom he used to hang out at Hansen's Drugstore on Broadway in New York City, told him.

"Why?"

"Well, that's totally segregated you know."

Randi wasn't sure he understood. "What do you mean?"

"It means that white and colored must be separated. They never attend a performance together."

Randi shrugged. "I don't care. I perform for everyone. I will put it in the contract that I will not perform for any segregated audiences."

"Good luck!" they responded.

When Randi arrived in Ocala, Florida, where the tour was due to open at the Ritz Theater, he realized that on his bus there was a chain that divided the seats: white on one side, people of color on the other. In the streets, there were always two water fountains: one for the whites and the other for "coloreds." It was the same for the bathrooms, on whose doors a sign read: "White Only" and "Colored Only." He was already starting to fume from his ears.

He went into a Woolworths to get something to eat.

"Hot dog and an orange drink, please," he asked.

"Oh, we can't serve you here, sir," the black waitress at the counter told him. "You have to go over to that side."

Randi looked and, of course, he saw a divider.

"Does orange soda taste different if I drink it over there?"

"No … it comes out from the same machine," she replied.

"Well, if you don't mind, I'll drink it here," he told her with a smile.

The girl smiled back, and then she brought out the hot dog and orange drink, but a guy on the other side yelled over: "Hey, you! Whatcha doin' over on that side?"

"Eating. Can't you see?"

"What, you a nigger lover?"

"Well, I don't know the young lady, but we can talk …," he quipped with a wink.

The guy was furious. He glared at Randi like he wanted to kill him.

Randi was sure that once he got out of that place he would get into a fistfight, and he couldn't wait to teach those bigots and retrogrades a lesson. However, nothing happened.

So he went back to the theater. That evening he presented his show; he freed himself from a straitjacket hanging by his feet from a hook suspended above the stage. The audience in the seats seemed to be almost exclusively white, but on the posters there was no mention of segregation, and, in any case, he had the spotlight right in his eyes, so he was not sure if he was seeing well.

At the end of his act, out of curiosity, Randi took a tour of the theater. In the lobby, he noticed that there were boxes of programs from the show with the schedule for the evening and biographies of the artists. Each one had a serial, consecutive number on the front. Everyone in the stalls had one; it was given as a gift at the entrance. However, it seemed strange to him that so many were left over.

The organizers were busy counting them, and Randi thought they wanted to keep them as souvenirs, because they had the name of the theater on them. So he asked the guys.

"Oh, we don't give out tickets. We give out programs, so we have to be able to account for every other program."

Randi realized it was clever because it was obvious that they were not going to pay for the unsold "tickets."

Then he went up in the balcony. He found that it was packed—only with black people.

"We can't be in the audience down there," a gentleman explained to him. "But we'd sure like to have a look at the program."

Randi was confused. "Wait a minute. You didn't get any programs?"

"No, they don't give us no programs."

Now Randi was enraged, sputtering "Wait right here."

He went downstairs, grabbed a huge box of programs, brought it upstairs, and started handing them out.

"Oh, thank you, sir. Thank you; thank you very much."

The organizer soon found out and was pissed off, demanding, "What the hell are you doing?"

"Well, these folks up here didn't get programs. I guess you forgot … Well, don't thank me."

The attendant turned purple with anger and walked away stomping his feet.

Soon after, Randi returned to his dressing room, packed his bags, and took the first bus to the airport, where he waited all night for the first flight back to New York. He had had enough, and for him the tour ended there. The theater manager later called him on the phone, threatening to sue him and take revenge. He threatened to make it impossible for Randi to work in any theater in the world if he didn't rush back to Florida.

"The contract that I signed said that I would not work for segregated audiences, but it wasn't like that in Ocala."

"Well, that's the way it is! It's normal over here!"

"It may be normal for you, but among civilized people this is an abomination," Randi replied and hung up the phone.

In the end, the theater manager was forced to pay Randi the agreed eight weeks, even though he had only performed once.

I wanted to share this story—which few people know and which Randi considered one of his great victories—because even if it has nothing paranormal about it, it illustrates very well how Randi, in his twenties, already had a very clear idea about what he considered intolerable in the world and knew that, if he wanted things to change, he had to commit himself personally.

Randi was like that all his life. The nice thing is that there are dozens of stories like this one, and every time I see a photo or open a box of clippings or a file of documents, they all come back to me, and I hear his voice while he tells them.

It hurts so much not being able to see him anymore and not being able to talk to him anymore. But he will always be here with me, in my mind and in my heart, and I really hope not only to be able to carry on his work in defense of rationality but also to always make my voice heard in the face of injustice. It won't be difficult; I just need to think "What would Randi do now?" and the response will be automatic.

Goodbye, Amazing. ·

[REALITY IS THE BEST MEDICINE HARRIET HALL

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Does Public Water Fluoridation Make Children Less Intelligent?

The Centers for Disease Control and Prevention named community water fluoridation one of the ten greatest public health achievements of the twentieth century. In a recent statement, the American Dental Association (ADA) stressed that it is "committed to fluoridation of public water supplies as the single most effective public health measure to help prevent tooth decay" and pointed out that "this commitment is shared by many national and international organizations, including the World Health Organization, U.S. Public Health Service, the Centers for Disease Control and Prevention, the American Medical Association, and the American Academy of Pediatrics" (American Dental Association 2019).

Nevertheless, many people continue to strongly oppose water fluoridation. Several countries have banned fluoridation, preferring other methods of providing fluoride. Opponents are quick to capitalize on any reports of harm. When a recent study in Canada reported that prenatal exposure to water fluoridation was associated with decreased IQs in children, the media were all over it, stressing the danger. Critical thinkers will want to avoid emotion-filled debate and instead will carefully evaluate the details of the evidence. What is the reality behind the fears and the hype?

Objections to Fluoridation

There are many objections to fluoridation; among the most common are:

1. Fluoride causes fluorosis (tooth discoloration), mainly at higher doses.
2. Additional sources of fluoride (toothpaste, etc.) can lead to higher doses than intended.
3. Water fluoridation forces medication on everyone, not just those who will benefit.
4. Other ways of providing fluoride are equally effective.
5. A Cochrane systematic review (Iheozor-Ejiofor et al. 2015) found small increases in caries-free children (15 percent for baby teeth and 14 percent for permanent teeth), and found that at 0.7 ppm, 12 percent of people will have fluorosis of aesthetic concern. It found evidence that intrauterine exposure decreases children's IQ, but it found that the quality and quantity of research was poor and inadequate:
   - Most of the studies (71 percent) were done before fluoride toothpaste was introduced.
   - There was a high risk of bias in the studies.
   - Many studies were of high natural levels of fluoride rather than of fluoridated water.
   - There was substantial variation in results.
   - There was inadequate evidence for a benefit in adults.
   - There was inadequate evidence for the effects of stopping fluoridation.

Benefits of Fluoridation

The ADA responded to the Cochrane review, noting that over seventy years of rigorous scientific research analyzing fluoride intake from all sources has consistently shown that an optimal level of fluoride (0.7 ppm) in community water is safe and effective, and it prevents tooth decay by at least 25 percent in both children and adults (American Dental Association 2015). They offered a booklet of "Fluoride Facts" explaining the evidence.

Studies Prior to Canadian Study

Before the Canadian study captured the public's attention, studies in several countries had looked for a possible association between fetal exposure to fluoride and measures of children's intelligence. Studies of laboratory animals had shown that fluoride could be neurotoxic, with effects on learning and memory. Because fluoride is known to cross the placenta, the idea was not implausible but needed to be tested in humans. Let's review some of the results of human studies done before the Canadian study.

The 2003 Chinese Study

A research report by Q. Xiang et al. (2003) found that higher drinking water fluoride levels from natural sources were significantly associated with higher rates of mental retardation (IQ < 70) and borderline intelligence (IQ 70–79).

The 2012 Harvard Systematic Review

Choi et al. (2012) published a systematic review and meta-analysis of studies on fluoride and neurobehavioral development. It found that children in high-fluoride areas had significantly lower IQ scores than those who lived in low-fluoride areas. Its methodology was criticized, and the statistical significance was not thought to reflect clinical significance (Sabour and Ghorbani 2013).

The review had several major flaws:

- The studies reviewed were not of fluoridation; they were from China and Iran. China does not fluoridate, but the natural water in some areas has a high fluoride content, and there is exposure to fluoride in the smoke from coal burning.
- The high fluoride exposures were much higher than with fluoridation; fluoridation has the same level of fluoride as the low-exposure control groups in China.
- Confounding factors were not considered.
- The review actually showed that fluoridation was safe.

Steven Novella (2012), in his *Neurologica Blog*, pointed out:

> There are many weaknesses to the epidemiological studies reviewed in the recent article—high heterogeneity, poor controlling for other variables, no indication of blinding of IQ assessments, and many others. But even taken at face value they do not indicate any association between lower IQ and the fluoride levels added to drinking water in the U.S. In fact, those levels of fluoride were used as the controls in these studies showing higher IQ. (There was a lot of variance of the effect size, but the net effect size on IQ in the meta-analysis was -0.45 IQ points.)

The 2015 Choi Pilot Study in China

In a 2015 pilot study by Choi et al., fifty-one Chinese first-grade children in a community with stable lifetime fluoride exposure found that deficits were associated with increased fluoride exposure (Choi et al. 2015). Dental fluorosis score was the exposure indicator that had the strongest association with the outcome deficits, and the WISC-IV digit span subtest appeared to be the most sensitive outcome. Moderate and severe fluorosis was associated with a digit span total score difference of -4.28.

The 2015 New Zealand Study

A study by Broadbent et al. (2015) in New Zealand was a prospective study of a general population sample of over a thousand subjects that found no difference in IQ from fluoride exposure. It concluded:

> These findings do not support the assertion that fluoride in the context of CWF (Community Water Fluoridation) programs is neurotoxic. Associations between very high fluoride exposure and low IQ reported in previous studies may have been affected by confounding, particularly by urban or rural status.

Novella (2014) pointed out that there was a trend toward higher IQ in the fluoride exposed group, but this was not statistically significant. Therefore, the study was negative. The lack of correlation held up even when they corrected for possible confounders such as socioeconomic status. He wrote, "This is as good as it gets for an observational study—a nicely controlled environment, large population, good long term follow up."

A Mexican Study in 2017

A 2017 study by researchers from the United States, Canada, and Mexico (Bashash et al. 2017) examined prenatal fluoride exposure and cognitive outcomes in Mexican children. The subjects were 229 mother-child pairs. Fluoride was measured in archived urine samples taken from mothers during pregnancy. Children were tested with the General Cognitive Index (GCI) of the McCarthy Scales of Children's Abilities at age four and with full scale intelligence quotient (IQ) from the Wechsler Abbreviated Scale of Intelligence (WASI) at ages six to twelve. They found that higher levels of maternal urinary fluoride during pregnancy (a proxy for prenatal fluoride exposure) were associated with lower scores on tests of cognitive function in the offspring at ages four and six to twelve years. IQ scores were estimated to be 2.5 points lower for every 0.5 increase in prenatal fluoride exposure, but the effect may be limited to higher fluoride exposures.

Another Mexican study in 2017

Another study in Mexico (Valdez Jiméneza et al. 2017) tried to more accurately quantify fluoride exposure. Data from sixty-five mother-infant pairs suggested that cognitive alterations in children born from mothers exposed to fluoride could start in early prenatal stages of life.

The Canadian Study

Now let's examine the recent study in Canada that raised so much alarm. It was a study by Green et al. (2019) in *JAMA Pediatrics* that examined 512 mother-child pairs in Canada. A 1-mg/L increase in maternal urinary fluoride was associated with a 4.49-point lower IQ score in boys, but there was no statistically significant association with IQ scores in girls. The scientific community pushed back.

A leading Canadian health agency evaluated the article. The Canadian Agency for Drugs and Technologies in Health (CADTH) (2019) published a report evaluating the Green study and concluded:

> The evidence is weak due to multiple limitations (e.g., non-homogeneous distribution of data, potential errors and biases in the estimation of maternal fluoride exposure and in IQ measurement, uncontrolled potential important confounding factors); therefore, the findings of this study should be interpreted with caution.

The study has serious flaws (Novella 2019):

- "It's hard to believe that a drop of 4.49 IQ points in boys was missed by prior research, and why is that effect so large while there is no effect in girls (just a non-statistical trend toward increased IQ)."
- The study is at odds with a large body of prior research showing no association.
- Even if high levels of exposure affect IQ, there is no association at less than 2 ppm, and fluoridated water typically has 1 ppm.
- When outliers were eliminated, the effect became nonsignificant. Two of the boys had extremely low IQs, specifically in the 50s.
- There was a disconnect: *performance* IQ decreased but *verbal* IQ increased.
- The unadjusted IQ differences were not statistically significant.
- They didn't look at post-natal lead exposure, which can cause severe decreases in IQ.
- Urine concentrations are variable. They only represent one point in time and have not been validated as a measure of total maternal intake.
- The results are consistent with noise in the data.

The study actually supported the safety of water fluoridation. Even one of its authors said that although she thought the study's results were valid, she continues to support fluoridation programs.

The way the media reported the Canadian IQ study was unfortunate. They raised undue alarm over findings that many scientists have criticized as questionable. Fluoridation is still the best way to reduce the risk of tooth decay for *all* children, including those from the poorest families and those who never see a dentist. Surely no parent would want his or her children to suffer unnecessarily from dental decay, and surely everyone would agree that preventing cavities is a worthwhile goal. In my opinion, it's fine for people to reject public water fluoridation, but only if they find another practical way to ensure that *all* children are provided with fluoride in another form.

The bottom line is that high doses of fluoride can be toxic, but the recommended concentration (0.7 mg/L) used in community water fluoridation is not harmful or toxic. Public water fluoridation is not going to decrease your children's IQs. ·

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When QAnon Prophecy Fails

Credit: Wikimedia

Jake Angeli, a.k.a. "The QAnon Shaman," photographed in Peoria, Arizona, in October 2020. (Source: Wikipedia)

One of the best theme parties I've ever attended was on May 21, 2011. The evangelical Christian broadcaster Harold Camping had garnered considerable publicity with a prediction that The Rapture would occur on that date and that approximately 3 percent of the world's population would be swept up to heaven to meet their maker. The rest us would be goners. May 21 happened to be a Saturday, so a neighborhood couple organized a "Rapture Party," designed a special Rapture cocktail, and invited people in. We all had a wonderful time celebrating an event we knew had no chance of happening.

Naturally, the next day was a bit of an embarrassment for Camping, who, despite having a BS in civil engineering from the University of California, appeared to have made an error in his calculations. After a period of contemplation, he recalculated and set a new Rapture date for October 11, which soon came and went. This was Camping's fourth incorrect end-of-the-world prophecy, and in May 2012, he announced that he was quitting the doomsday prediction game. He died in 2013.

QAnon Prophecies

In recent months, we've heard about another momentous prophecy that did not come to fruition. The shadowy internet conspiracy group QAnon has been thrust into the American consciousness due to its prominent role in the siege of the U.S. Capitol on January 6, 2021, as well as the controversy surrounding Marjorie Taylor Greene, the newly elected member of the U.S. House of Representatives who is well known for her support for the group (Greenspan 2021). Of all the many photos we have seen of the marauders who stormed the Capitol, the "QAnon Shaman" (a.k.a. Jake Angeli) is perhaps the most memorable. Bare-chested and heavily tattooed, he wore red, white,

and blue face paint and a fur headdress complete with horns. Several other rioters carried or wore QAnon symbols.

QAnon is a loose but surprisingly large group of people who believe a collection of conspiracy theories, most notably that Democrats—including Joe Biden, Hillary Clinton, Barack Obama, and George Soros, as well as media figures Oprah Winfrey, Tom Hanks, and Ellen DeGeneres—operate a global cabal of Satan-worshipping pedophiles (Roose 2020). That last sentence sounds crazy, but an NPR/Ipsos poll conducted in December 2020 found that 17 percent of respondents agreed with the statement: "A group of Satan-worshiping elites who run a child sex ring are trying to control our politics and media" (Newell 2020). Yes, *17 percent*. Another central tenet of QAnon doctrine is a commitment to Donald Trump, who is seen almost as a god. As Stephanie Kemmerer, author of the March/April 2021 Skeptical Inquirer cover story on QAnon, put it to me in an email, "Not all MAGA are QAnon, but all QAnon are MAGA." According to QAnon lore, Trump was recruited to run for office in 2016 by military generals so that he could break up and arrest all the members of the pedophile conspiracy (Roose 2020).

So where do the prophecies come in? Stay with me. QAnon is thought to have its roots in the debunked Pizzagate conspiracy theory of the 2016 campaign cycle that suggested that Hillary Clinton was operating a sex trafficking ring out of the basement of a popular Washington, D.C., pizza restaurant (in fact the building didn't have a basement [Wendling 2016]). In October 2017, a mysterious character known as "Q clearance patriot" began posting on the 4chan message board, home to a variety of illegal and offensive content. "Q," as he is known, was purported to be someone who had security clearance and access to secret information. He began posting cryptic messages, called "Q Drops" (archived at https://qanon.pub/), many written in the kind of ambiguous language found in psychic readings but filled with right-wing political content. Often these communications employed old anti-Semitic conspiracy theories, promoted false claims, and made predictions—some tied to specific dates.

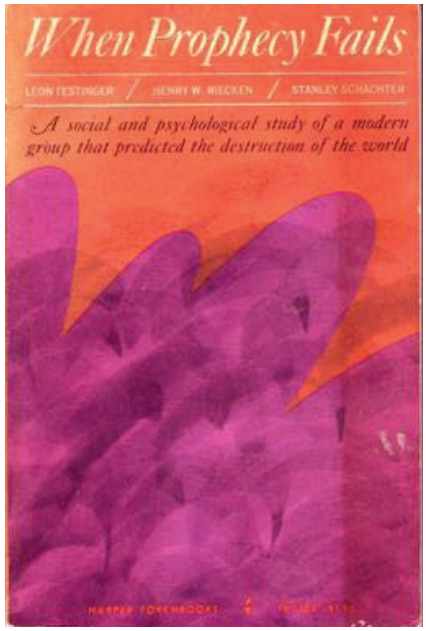
Many QAnon predictions have proven to be false (Rothschild 2021). For example, an early Q Drop said that the arrest of Hillary Clinton was underway and was being coordinated with the National Guard in the event she tried to escape abroad. Despite the many false leads, QAnon appears to have gained rather than lost followers. However, all this happened while the movement's spiritual leader, Donald Trump, was still in power. Perhaps the most important QAnon prediction was that Trump would be inaugurated for his second term on January 20, 2021. When that day came and Joseph Biden took the oath of office on national television, the most important of all prophecies failed. There have been some reports of disaffected QAnon proponents leaving the movement (Collins and Zadrozny 2021), but social psychology suggests confronting a failed prophecy may actually strengthen belief rather than weaken it.

Cognitive Dissonance

Many professional psychics have learned the lesson of apocalyptic predictions: *predict whatever you want; just don't give a specific date*. If you tell someone, for example, "You will meet a tall dark stranger," no matter who your victim is, they will eventually run into someone they can fit into the prediction. Or they will forget the prediction altogether. But when a prophecy is specific enough that clear failure is possible—and when there are people who have a stake in the prediction being correct—cognitive dissonance can result. As it was later described by psychologist Leon Festinger, cognitive dissonance is a state of unease created by a conflict between your beliefs and your actions, which is often resolved by changing your beliefs (Festinger and Carlsmith 1959).

But the kind of dissonance that many QAnon followers may now be experiencing was first described in one of the classic books of social psychology, *When Prophecy Fails: A Social and Psychological Study of a Modern Group That Predicted the Destruction of the World* (1956), coauthored by Festinger, Henry Riecken, and Stanley Schachter. The book recounts a rare participant observation study of a Chicago-area UFO doomsday group led by Dorothy Martin (called Marian Keech in the book), a follower of Scientology who claimed to communicate with higher beings—"guardians" from the planet "Clarion"—via automatic writing.

Martin made a prediction that the world would end in flood on a specific day, December 21, 1954, but that her followers would be safely spirited away in a spaceship. When a news article about the doomsday prediction appeared, Leon Festinger and his colleagues at the University of Minnesota recognized that the case set up a rare opportunity to study people forced to deal with a major disconfirmation of their beliefs. As a result, the coauthors and some paid researchers infiltrated Martin's group to observe how the members reacted.


When Prophecy Fails
LEON FESTINGER / HENRY W. RIECKEN / STANLEY SCHACHTER
A social and psychological study of a modern group that predicted the destruction of the world
Cover of the book *When Prophecy Fails*. (Source: Wikimedia.)

The surprising result was that after the doomsday date passed, rather than giving up on Martin and her Clarion guardians, many group members actually strengthened their belief and

QAnon supporter at the Million MAGA March in Washington, D.C., on November 14, 2020. (Credit: Elvert Barnes on Flickr)

accelerated their proselytizing. Given this outcome, what can we expect from QAnon, whose leader has now been deposed? Might they somehow strengthen their belief in QAnon conspiracy theories? As psychologist Chris French outlined in an article for *Skeptic* (U.K.), Festinger, Riecken, and Schachter identified five conditions that make this kind of redoubling of belief possible (Festinger et al. 1956, 216):

- There must be conviction.
- There must be commitment to this conviction.
- The conviction must be amenable to unequivocal disconfirmation.
- Such unequivocal disconfirmation must occur.
- Social support must be available subsequent to the disconfirmation.

In the case of Martin's followers, they strongly believed they were going to be saved by a spaceship that would take them away before the floodwaters rose. As an indication of their commitment, many quit their jobs and gave away their possessions as the date of deliverance approached. The prediction was very clearly disconfirmed when no spaceship appeared and the world did not end, and some members of the group began to express doubts and drifted away. But those who had sufficient social support from members of Martin's group remained attached and, in some cases, actually increased their efforts at promotion and recruitment of new members.

All this leads us to the question: Now that the QAnon group's most important prophecy has failed, will they become disillusioned, more committed, or neither? A quick look at the five conditions that Festinger and his colleagues identified shows that most, if not all, are present for the QAnon faithful. Many sincerely believe all these crazy theories and have made significant commitments to the cause. They have purchased QAnon paraphernalia and brought it to Trump rallies. In the case of the January 6 rally and siege, many traveled long distances during a pandemic to be there. Some have undoubtedly endured the ridicule and rejection of family members and friends.

So, given that all the other factors are present, the presence or absence of social support is probably the most important factor. If QAnon enthusiasts have sufficient social support for their views, they will carry on, and it is quite likely that many do. Unlike Martin's followers, the QAnon faithful have access to the internet. If they can find no support for their views in their immediate real-world social environment, they will always be able to find each other in the virtual world.

Q's posts first appeared on the 4chan bulletin board, migrating to 8chan, and finally to 8kun (Paul et al. 2021). Since December 8, 2020, the day before the last state certified its 2020 election results, Q has been silent (Stark and

Trump supporters in a boat parade in San Diego, California. (Source: Pixabay.)

Cohen 2020). Furthermore, all the usual bulletin boards Q has used have been shut down. Following the siege of the U.S. Capitol, these toxic websites—which have been connected to the deadly white nationalist attacks in Christchurch, New Zealand, and El Paso, Texas, as well as the attack on the Capitol—lost their hosting services (Paul et al. 2021).

However, despite the current absence of Q and Q Drops, at least for the moment, QAnon culture is sufficiently developed to sustain itself on the internet indefinitely. As a result, several commentators have suggested that the QAnon movement will not disappear (e.g., Bowman 2021; Edsall 2021). Similarly, Chris French concluded, "Those supporters for whom QAnon became central to their very identity will most likely double down and become even more committed to the cause" (French 2021). In the short term, at least, I agree. But there is one wild card that could have a powerful effect on the movement: Donald Trump.

The Trump Effect

QAnon was not the only fringe group in attendance on January 6, and it may not have even been the most important group with respect to the insurrection at the Capitol. The flags, uniforms, and emblems worn during the riot make it easy to identify some of the groups participating, and the *New York Times* provided a glossary of them a week after the attack (Rosenberg and Tiefenthäler 2021). In addition to QAnon followers, the groups who participated included several militia organizations, including the Oath Keepers and Three Percenters; racist and anti-Semitic groups, such as the The Proud Boys and The Boogaloos; and several other more esoteric right-wing factions. But by far the largest group was Trump supporters. Trump flags and MAGA hats were everywhere, and at the height of the violence, enormous Trump banners were draped from the exterior walls of the Capitol.

Donald Trump is a unique phenomenon in American politics in at least three ways. First, he has become part of the identities of many of his followers. I live in a solidly blue area of New England, yet as I drive around the area, I run across private homes that seem to be permanently festooned with Trump iconography. Tall flag poles in front yards display blue Trump flags. Occasionally, I come across a pickup truck decorated like a parade float with Trump posters and flags. We all witnessed the emerging phenomenon of Trump boat parades. In my fifty years as an American voter, I have never seen anything like this. Of course, in the weeks before an election, many people put signs in their yards, bumper stickers on their cars, and advertise their political preferences in other ways. The Trump phenomenon

is not like that. For many Americans, Trump is more than a Republican Party candidate. He is their leader and part of their identities.

Second, Trump has provided a home for the most racist, irrational, and anti-Semitic groups in the country. When asked to do so, he has assiduously avoided denouncing David Duke; the white supremacists at the Charlottesville, Virginia, "Unite the Right" protest; QAnon; and the Proud Boys. White nationalist groups have operated in the United States for a long time, but never have they been so welcomed under the flag of a mainstream politician as they were during the Trump period.

Third, Trump has embraced lying and sophistry like no other mainstream politician. One of the most disturbing aspects of extremist gun culture in the United States has been the proliferation of conspiracy theories to explain away many of the most horrific mass shootings of our history. Long before Trump was a candidate, pro-gun YouTubers would post videos purporting to prove that mass shootings were "false flag operations" staged by gun control advocates and that the victims of these attacks were actually "crisis actors" (Wilson 2018). Famously, the former InfoWars broadcaster Alex Jones denied that the Sandy Hook, Connecticut, school massacre was real, and as a result, he is still engaged in a legal battle with the families of the victims (Axelrod 2021). Although Alex Jones has been banned from many platforms and most of the false flag videos have been removed from YouTube, the mental habit of embracing conspiracy theories and denying any damaging event has gone mainstream—encouraged by the former president. According to the *Washington Post*, during his time as president, Donald Trump made 30,573 false or misleading statements (Kessler 2021), and in a phone call with Republican Representative Kevin McCarthy five days after the attack on January 6, Trump blamed the violence at the Capitol on the left-wing group Antifa. McCarthy replied: "No, it's not Antifa, it's MAGA. I know. I was there" (Swan 2021). As of this writing, Trump has yet to acknowledge that he lost the 2020 election.

When there is no solid grounding in truth, any inconvenient fact can be explained away. QAnon followers have endured numerous failed prophecies, but many believers will have no problem using motivated reasoning to rationalize these disappointments. The theory of cognitive dissonance suggests that some members will endure and even become more committed to their cause. The question is, how many? Dorothy Martin was no Donald Trump. The fate of QAnon and many other far-right groups depends to a large degree on Trump's next steps. If Trump reemerges on the national stage, QAnon will continue to thrive. As long has he remains their spiritual leader, past failures will be seen as anomalies or—better yet—successes. It was all part of the plan. Alternatively, if Trump is himself marginalized and no similarly demagogic leader emerges, I suspect the number of QAnon faithful will be much smaller. If we are to avoid more political violence, this last possibility must be our hope. ·

Acknowledgment

I want to thank Stephanie Kemmerer for her assistance with this column.

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[SKEPTICAL INQUIREE BENJAMIN RADFORD

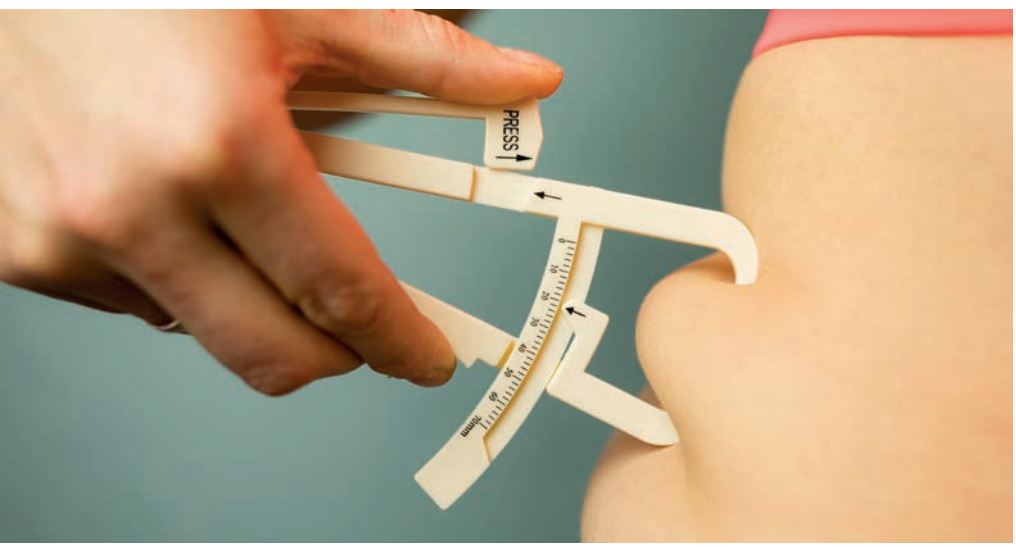
Benjamin Radford is a research fellow at the Committee for Skeptical Inquiry and author or coauthor of thirteen books, including *Big—If True: Adventures in Oddity*.

BMI and the Argument from Antiquity

Q: **I finished reading your SKEPTICAL INQUIRER article[1] on BMI ("Bashing the BMI: A Closer Look at the Skeptics"). It's a good piece; however, I feel compelled to point out a logical flaw. You wrote, "If anything, the fact that the BMI has been widely used for so long is actually evidence that it works—not that it doesn't work." Data show something works and is useful, not time. The same could be said about homeopathy, mega dosing, acupuncture, and so on.**

—G. Moffitt

A: The Body Mass Index (BMI) is a simple formula: (weight in pounds / [height in inches X height in inches]) X 703. A score of 18.4 or lower indicates underweight; 18.5 to 24.9 indicates normal weight; 25 to 29.9 is overweight; and a BMI of 30 or higher suggests obesity. My article explained why the BMI has been ridiculed for years—not by medical professionals, who use it on a regular basis, but by others.



By far the chief complaint is that BMI doesn't give accurate readings for everyone, and overemphasizes the role of weight in health. … Another criticism is that the BMI was developed over 150 years ago, and its longevity somehow discredits it. What would become the BMI was developed around 1850 by a Belgian statistician named Adolphe Quatelet and has been used more or less since then. This is, of course, flawed logic: if anything, the fact that the BMI has been widely used for so long is actually evidence that it works—not that it doesn't work. To use only one example of many, germ theory has been around since at least 1815, and no one suggests that germ theory is "outmoded" or incorrect merely because it's been around for nearly 200 years. (Radford 2012)

As I wrote that, it occurred to me that someone might take me to task (and I appreciate readers not letting me down), but I think it's valid. On the surface it might seem like an argument from antiquity logical fallacy (also known as the appeal to tradition), which suggests that something is good or proven useful merely because it is old, traditional, or has "always has been done."The implicit argument is that, all else being equal, people wouldn't keep doing something if it didn't work.

But the context here is important: the BMI is not used among soothsayers, acupuncturists, or homeopaths; it is used in the medical establishment. It is true that data, not time, determine whether something is useful, but data and time are not independent factors. They are inextricably linked.

It is true that now and then a drug or medical procedure is, in retrospect, found to be no more effective than a pla-

cebo. But when it is, medicine addresses it, and the drugs and treatments fall by the wayside and are discredited—usually within a few years. Because of this, medical practices (such as the BMI) are likely to be valid if implemented for over a century. I did not suggest that the BMI's longevity *by itself* proves its efficacy or validity—just that it lends some support to that assumption.

The examples offered, such as homeopathy and acupuncture, are a bit different because the argument from antiquity is typically offered in place of—not in addition to—published research demonstrating the efficacy of the treatments (patients hear, "Of course this works; it's been used for centuries!" not "Of course this works; it's been scientifically tested for centuries. Look at these studies!"). Not only have they not been rigorously tested throughout their use, but they aren't as old as their proponents often claim.

There's another important difference between homeopathy and acupuncture and the BMI: The BMI is a *measurement*, while the others are *interventional therapies*. You can do randomized, blinded, controlled clinical trials on acupuncture, vitamin megadoses, homeopathy, etc.; either the outcomes of interest (such as blood pressure, pain, or disease) clinically improve, or they don't.

The BMI is different; it's a straightforward calculation, so there's really nothing to test or "disprove" about the BMI itself. One can of course challenge whether being overweight or obese is a significant health risk, but that's a different question and not specific to the BMI (as opposed to other ways of measuring body fat such as calipers, hydrostatic weighing, bioelectrical impedance analysis, etc.). Dozens of studies, and several meta-analyses, of the association between BMI number and health have consistently demonstrated that excess weight is indeed unhealthy. For example, "This meta-analysis provides further evidence on the impact of obesity on both aspects of health-related quality of life" (Ul-Haq et al. 2013); "We document, once again, excess mortality associated with obesity" (McGee 2005); and "The associations of both overweight and obesity with higher all-cause mortality were broadly consistent in four continents" (Global BMI Mortality Collaboration 2016).

As I noted in my article, the limitations of the BMI are well known to doctors. No competent doctor would classify a patient as underweight, normal, or obese based only on a BMI score; it's a starting point, a general guideline, not a strict rule that correctly predicts overweight in everyone. The BMI's long-term use—coupled with a raft of peer-reviewed data, of course—suggests it's a useful measure of health. ·

Note

1. This article was an online only exclusive for skepticalinquirer.org.

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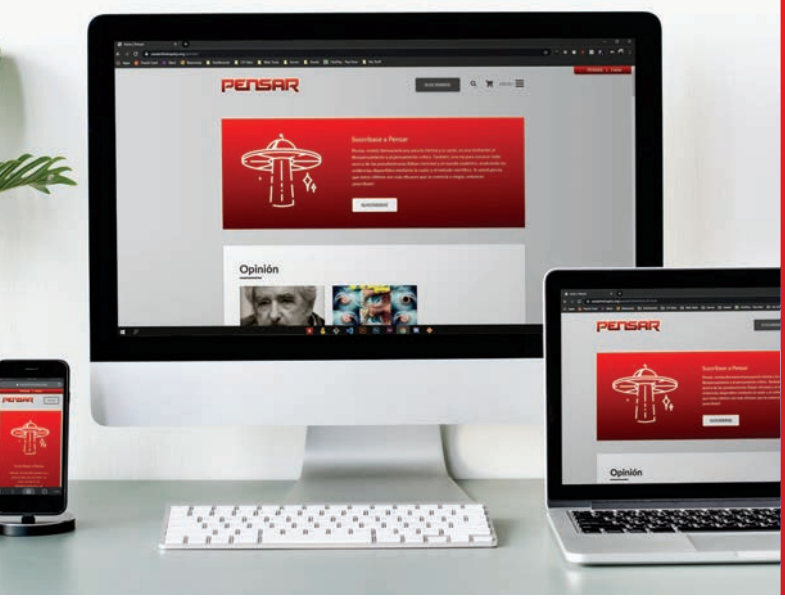

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Roots of January 6 Anti-Democracy Riot Sown Years Ago

DAVID HAHN

In 2015, I warned a friend of mine that the newly minted "alt-right" should not be taken lightly. We disagree politically; she identifies as a conservative and would eventually be a Trump supporter. She was expressing amusement, via Facebook, over liberal worrywarts who were clutching their pearls because of the rhetoric of people such as Milo Yiannapolis, Mike Cernovich, Stephen Baldwin, Steve Bannon, etc. I tried to explain that they don't anger me because I don't agree with them or their bold style but because they were dangerous people who should not be given attention or power in any political sphere.

My knowledge of them came from the travesty known as "Gamergate." About a year before this conversation, the online video game community was deeply divided. Gamergate is only complicated in that it is difficult to describe, but the events are relatively simple: a crowdfunding campaign was set up to fund a series of videos that were going to examine video games from a feminist perspective. This examination was met with a response that only looks predictable now in retrospect: extreme anger. I'm not going to go deeply into whether or not the video project's goal was noble or correct. Instead, I'll focus on the response.

Along with this original project, the victims of this "controversy" were a female game developer, who was initially the subject of a harassing screed on 4chan and Reddit by an ex-boyfriend, and then anyone who dared criticize Gamergate. Victims were doxed, harassed, hacked, and threatened—all under the guise of "protecting ethics in game journalism" or "free speech." On January 6, 2021, one of the original Gamergate victims tweeted that (I'm paraphrasing), Gamergate didn't cause the January 6 anti-democracy riot at the Capitol. It was the symptom of the same problem that has now grown larger.[1]

I agree with the person's sentiment. To find the origins of where this comes from, we have to delve back a few decades. The first inkling should have been the 1995 Oklahoma City bombing. The bombing was undoubtedly a fruit of the same seed, only it was more public and with an evident loss of life. It should have been a wake-up call. The bombing by Timothy McVeigh was rooted in the anger of the "Patriot Movement" of the 1990s where we saw a springing up of state "militias" paranoid over an impending takeover of the United States by the United Nations (or the New World Order, Illuminati, etc.). This fear of a takeover was broadcast on AM radio shows, such as Milton Cooper's *Hour of the Time* (the prototype of the Alex Jones mold we have today). Cooper repeatedly called for action against the government, which he felt had betrayed American citizens to another purpose. This purpose was originally some kind of UFO conspiracy and is reflected in Cooper's seminal conspiracy theory work *Behold a Pale Horse*. McVeigh was a fan; Cooper claims to have met him shortly before the bombing, but this claim cannot be substantiated (Jacobson 2018). McVeigh was also a fan of the book *The Turner Diaries*, a notoriously racist and anti-Semitic book describing the takeover of the United States by a group of communist liberals aligned with various races and ethnic groups. All the rhetoric we saw on January 6 with some differences in proper nouns.

The seed of January 6—pro-Trump fascists violently assaulting the Capitol building in a vain, futile, and ignorant attempt to stop something that was merely a formality—is in the influence of the political group The John Birch Society (JBS), which was founded in 1958. If you are unfamiliar with the JBS, it was the incubator for the right-wing mess we have today (Towler 2018). The society is named after a man who died at the hands of Chinese forces shortly after World War II. To be clear, he was not killed fighting Communists, which is what the JBS claims. Instead, it was likely a misunderstanding that led to his death. John Birch is a myth to the John Birch Society.

The JBS's professed goal was to stop a Communist takeover of the United States. It was a fear much more real then than it is today, but they were a group that didn't think J. Edgar Hoover, Joseph McCarthy, and the House Un-American Activities Commission was going far enough to root out Communists. In 1958, the JBS internally published a book, *The Politician*, which claimed that President Eisenhower was secretly Communist. The claim is telling because, though we never hear it spoken aloud today, Eisenhower is arguably the first modern Republican president. However, he would be loudly derided as a leftist and progressive by mainstream Republicans for his policies today. The Society, according to its website, says the book is the first to expose the "deep state" (jbs.org). If you look at JBS literature from the 1960s, it looks like a list of today's right-wing talking points. This is not a coincidence. The current CEO of the society agreed that the modern GOP is finally embracing

the JBS (Gomez 2017).

The John Birch Society's most prominent effect was framing political debates not as competing ways forward from different perspectives but as wars for survival. The JBS wasn't merely saying we can do this better; they were saying if you don't align with us, you are going to die, and the country is turning Communist. This rhetoric hopes that you agree or you will have to tell your kids about the time when America was free. Couple this with a growing conspiracy-theory-fueled paranoia (Brack 2015), and the result is Timothy McVeigh parking a rental truck in front of the federal building in Oklahoma City. In McVeigh's mind, he wasn't committing mass murder; he was striking a self-defensive blow against the perceived tyrannical government.

A similar theme emerged when Edgar Welch drove from Salisbury, North Carolina, to a pizza joint in Washington, D.C., to free the kids kidnapped and held for sex-trafficking and murder by liberal politicians. On January 6, those who stormed the Capitol Building were trying to save democracy by ironically fighting against the election results. They were doing so because they were told by people of such importance—no less than the president himself—that the election was stolen by "them." It's not just because they couldn't deal with the fact that their guy lost. Trump's loss pushed people already on the fringes of conspiracism to full belief based primarily on their political belief that the soul of the country and its very existence was now imperilled (Miller et. al 2016).[2]

The JBS planted the idea that if conservatism lost, it was because democracy itself had been stolen. They were hugely influential on Senator Barry Goldwater's campaign as he railed against the country's subversion by the Tri-Lateral Commission—an innocuous non-governmental think tank that most Americans were barely aware existed (Goldwater and Shadegg 1980). Replace today's fear of "the deep state" or "the Illuminati" with fears of that think tank, and you have Goldwater's rhetoric. Every time they talk about their opposition as "elites," "the media hates us," or loudly and ironically professing their love for the Constitution, it's the JBS speaking through them. The primary difference is that the JBS coupled their polemics with accusations of Communism—although we still have that today too.

This brings us to the present. If the struggle for survival is real, we can debate what we can and cannot do to survive. However, the struggle is not real. The voters spoke, and once again, the Democratic party won the popular vote. This time, they won the electoral vote as well. Instead of resigning to the loss, the now former president dredged up the language of the JBS, of the militia movement of the 1990s, and his rhetoric of the past four years. He framed the pro forma counting of the electoral college votes as the nail in their coffin, and all they had to do was fight back. They—having been primed for nearly seventy years as being the scrappy underdogs fighting a Manichean war against not political opponents but pure evil itself—had to act.

In May 2019, the FBI issued a bulletin warning that this kind of conspiratorial thinking was becoming a real-world threat (FBI 2019). The bulletin received little traction, and within William Barr's Department of Justice no action, as they were reluctant to act against their support. We know that the riot was not a spontaneous action but had been motivated by this type of thinking for weeks. Skeptics had been warning of this for years, but we were dismissed as hyperbolic Chicken Littles who were mistaking rhetoric for action. As private citizens, there was very little we could do to stem the religious-like zeal that these people seemed to have. The failure to stop what happened lies in the very chamber that it ended in. Instead of worrying about poll numbers or angering the rabid base that was already feeling cornered in, they could have thrown water on the fire instead of stoking it. ·

Notes

1. Zoe Quinn (@unburnt Witch): "Hey, if you wanna say GamerGate led to this without acknowledging that GG was a symptom that has always existed, an extension of DV, and the failure of online platform holder to act right, I really don't appreciate being used like that!!" 18:53 06 Jan 21.

2. Miller argues that belief in conspiracy theories serves an ideological and psychological need. In this case, it is both because it fulfills the ideological position of the JBS's rhetoric and comfort for supporters in the wake of Trump's defeat.

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How to Repair the American Mind

Solving America's Cognitive Crisis

GUY P. HARRISON

"Every person we save is one less zombie to fight." —World War Z, 2013 film

What is the great lesson of 2020? A pandemic killed hundreds of thousands of people and ravaged economies while people disagreed on basic facts. Conspiracy beliefs ran amok. Unscientific racism surged on social media. Medical quackery enjoyed a boom year. What was the common thread that ran through all of it? What should we have learned from such an extraordinarily eventful year?

The crucial ever-present factor in 2020 was *critical thinking*. Those who thought well were less likely to tumble into the rabbit holes of thinking QAnon is true, COVID-19 is a hoax, 5G towers help spread the virus, racism is scientific, hydroxychloroquine cures COVID-19, demon sperm is a problem, tracking devices are in vaccines, there is mass election fraud, etc. The ability and willingness to lean toward evidence and logic rather than side with blind trust and emotion was the key metric behind the madness. We may view the current year, 2021, as the test to see if we were paying attention in 2020. So far, it doesn't look good.

The January 6 invasion of the U.S. Capitol Building by rioters and vandals was more evidence that political propaganda and irrational beliefs have reached crisis levels. Millions of Americans now seem hypnotized by dishonest news sources, medical quackery claims, social media manipulation, and preposterous conspiracy beliefs. Some unknown number of them are willing to break laws and threaten others with violence. We can passively wait and hope that this dangerous offshoot from comparatively harmless believers shrinks, or our society can make intelligent proactive efforts toward ensuring that it does not become a greater problem.

Gullibility, fanaticism, and political trickery are not new, of course. America has always suffered a costly love affair with fraud and fantasy (Anderson 2017). But it all feels faster, louder, and more dangerous these days. One no longer needs to be a charismatic apocalyptic

preacher with a brick-and-mortar church or a well-funded politician to pollute minds at a steady clip. Today anyone with a Facebook or Twitter account has the potential power to ignite wildfires of public lunacy.

The Capitol insurrection was a tornado strike made of swirling irrational beliefs, a national self-inflicted wound that never should have happened. A sitting U.S. president and his allies used television, radio, and social media to weaponize some of the most gullible people in America. Key instruments of modern communication could be informing, entertaining, and uplifting us almost exclusively. Increasingly, however, they are maliciously exploited to infect vulnerable people with mental viruses that transform them into either tragic fools or dangerously deranged mission-focused zombies (Harrison 2017). But it may only get worse. The next level of synthetic video/audio media, called deepfakes, is nearly impossible to identify as false, and an avalanche of it is about to drop on our heads (Westerlund 2019).

Our present course may be unsustainable. The synergy of increasingly sophisticated deception aimed at unthinking masses promises more crippling confusion, disruption, and chaos, perhaps more than America can endure. Every minute worrying about nefarious microchips in vaccines is time not spent intelligently evaluating risk and assessing evidence. Every day sacrificed at the altar of a conspiracy belief or at the feet of a hollow demagogue is another day lost to possible social and political progress for all.

Our best hope is to attack the source of the problem. But what is it? What is the real root of this crisis, and what is the solution most likely to work? Attempting to corral or mute those who promote fraud and bad beliefs will not work. Another con artist will always be waiting in the shadows, and disturbed minds will keep conjuring up baseless beliefs. The reason our problem of mass delusions and rampant disinformation can exist to the degree it currently does is because too many American minds are incapable of handling close encounters of the irrational kind. The key problem is that America is a nation of believers more than a nation of thinkers. Therefore, our primary target should not be the few who sell lies and fantasies but the many who so eagerly buy them.

The key problem is that America is a nation of believers more than a nation of thinkers. Therefore, our primary target should not be the few who sell lies and fantasies but the many who so eagerly buy them.

Vast numbers of people do not know how to think critically and are insufficiently aware of how easy it can be for anyone, regardless of general education or intelligence, to be lured into a bogus belief. This abundance of unprotected minds provides the necessary foundation for our growing crisis. Minus many millions of people in such a vulnerable state, empty claims and ridiculous beliefs could not rage across the land collecting converts with the ease they do now.

I detail the problem of conspiracy theory belief in one of my books, *Good Thinking*, and explain how gossip naturally appeals to us and makes us feel special when we know something others do not (Harrison 2013a). Confirmation bias, a troublesome process even the best of minds contend with, helps cement these beliefs by making them seem logical and evidence based. Familiarity with this and other such information makes people significantly less vulnerable. Bad beliefs can take root in any mind, even one that may be gifted and filled with knowledge. Some conspiracy believers demonstrate remarkable mental sharpness and vigor in protecting the nonsense inhabiting their heads. Picture a world-class lawyer skillfully and effectively defending a guilty client. General ignorance, or what some might describe as innate stupidity, are not the key problems. This crisis grows not from *no thinking* but from *bad thinking*.

If you are skeptical of the claim that America is in the midst of a critical thinking crisis, consider that many (possibly most) of the January 6 Capitol rioters were QAnon believers. Going all in with QAnon means believing that a long list of celebrities and political elites—including Lady Gaga, Bill Gates, Joe Biden, and Tom Hanks—operate an international satanic cannibalistic child sex-abuse organization. It is a claim so extraordinarily vacuous that it can almost serve as the perfect litmus test for the pathological absence of critical thinking.

QAnon is a claim so extraordinarily vacuous that it can almost serve as the perfect litmus test for the pathological absence of critical thinking.

QAnon is a movement with no clearly identified founders or leaders and no formal doctrine. It is a big-tent/grab-bag of many old and new conspiracy theories. It accommodates a long list of suspicions, fears, resentments, and prejudices (Blaskiewicz 2018). QAnon is the Costco of conspiracy theories, the Walmart of weird beliefs: "Whatever you want, we got it." It also has a *Da Vinci Code* element that seems to appeal to many believers who excitedly search for clues and follow online crumbs toward big "revelations." Despite the absence of any credible evidence and the overwhelming unlikeliness of it all, the combination of fuzziness, inclusiveness, and flexibility is working. QAnon has sucked up millions of unprepared minds in recent years. [See Part 2 of Stephanie Kemmerer's two-part article on QAnon in this issue.]

According to a recent NPR/IPSOS national poll, less than

half (47 percent) of Americans say QAnon's core claims are false (Newall 2020). Seventeen percent of U.S. adults—millions of voting-age citizens—admit to believing. Also alarming: 37 percent are "unsure." Imagine being on the fence about whether Tom Hanks and Beyoncé are working with Satan to traffic child sex-slaves around the world.

As if it were not interesting enough already, some people include lizard aliens in the QAnon recipe (Wallis 2021). These infiltrators from outer space supposedly include Queen Elizabeth, George W. Bush, and Barack Obama. The usual claim is that they are either shapeshifters or merely hiding beneath human skinsuits. This is not how the twenty-first century was supposed to be going for us. As a child nurtured on *Star Trek* reruns, I imagined our species solving poverty, ending war, and colonizing other worlds by now. Silly me. Here I am today discussing a popular belief that reptilian extraterrestrials reside in Buckingham Palace.

How can we prevent QAnon and other such beliefs from corroding our nation's collective sanity to the point of no return? Unfortunately, there is no quick fix available. But there is a preventive treatment. Most won't like it because it's slow and involves a lot of work. But it is a solution, perhaps the only one with a fair chance of success. Playing the long game of critical thinking education is the only way to deny the irrational-belief beast and the steady supply of victims it depends on.

Extreme political manipulation, social media idiocy, QAnon, and other cognitive disasters likely would dry up and shrink to insignificance if robbed of their current deep pool of unquestioning targets ready for assimilation. Those who understand the need to stop America's slide into ever-deepening irrationality must push our society to raise up new generations of *thinking citizens* who are capable of identifying and shrugging off unproven claims. The American mind can be repaired in the long term by teaching the skills and principles of critical thinking to every child. I am aware of the grandiose and cliché-like feel that comes with citing education as the only salvation from a big problem. But in this case, it really is the way.

Making critical thinking a national educational norm is the cognitive vaccine America needs to have a fighting chance of maintaining sufficient sanity. Good thinking prevents and alleviates bad thinking. Young students can be taught reason and skepticism as basic life skills. This would not be the kind of education that involves learning a bunch of facts for later regurgitation. Critical thinking is more like learning a trade. As one might train to weld or build furniture, one can learn how to think well out in the world.

Critical thinking courses for all elementary, middle, and high school students might include age-appropriate lessons on how to ask the right questions when confronted with an unusual or important claim; a review of common logical fallacies (with an emphasis on relevance to everyday experiences); how to select reliable information sources; a basic survey of the surprising but normal workings of a human brain (how the brain processes visual input, seeks patterns, why memory is unreliable, subconscious influence on conscious thinking, etc.); review how the "critical thinking" concept can be

abused and misrepresented (many QAnon believers, for example, urge people to "think critically" and often say "do your own research," but this means little when poor information sources, flawed logic, and bogus evidence are attached to such advice); historical review of past mass delusions, frauds, and costly mistakes rooted in poor thinking; and discussions about the many positive benefits of good thinking (increased odds for a safer, more efficient, and productive life).

Given its importance to individual and national health, why not teach critical thinking every day in every school? Why not give it the same attention and emphasis as reading, mathematics, the Pledge of Allegiance, or anything else? Doing this would not preclude addressing the social and health needs of struggling Americans. It would not stand in the way of the need for intelligent social media regulation, vigilance against domestic terrorism, or general science and history education.

As a parent and former teacher, I have seen how easily young students can pick this up. With guidance and encouragement, children can become highly proficient at thinking their way through spurious claims, recognizing potential problems of perception, and spotting bias and lies. From the earliest ages possible, children in the United States, and all countries, should be taught thinking skills because it will serve them well throughout their entire lives. It also just may save our civilization from implosion one day.

Having written several books and given many lectures and interviews on this topic, I know from experience that some people cringe, if not shriek in horror, at the thought of teaching critical thinking to ten-year-olds. But these concerns seem rooted in a misunderstanding of what critical thinking is. To be clear, it is not a list of approved ideas and taboo beliefs. Critical thinking is the means of figuring out if something makes sense and is likely to be true or not. Nothing is threatened apart from lies and errors in reasoning. Hopefully, one would want these exposed to avoid wasting time, energy, or money or risking good health. Thomas Paine put it well: "It is error only, and not truth, that shrinks from inquiry."

Anyone who opposes critical thinking education is effectively taking a position against reason and reality.

Considering the current American landscape, this is inexcusable stark negligence (Uscinski 2019). We cannot continue to fail so many children. They need the necessary tools to be able to navigate the increasingly complex and foreboding information jungles of twenty-first-century civilization. We owe students better than leaving them to exit schools on graduation day as soft targets for con artists and victims-in-waiting for delusion peddlers.

"Critical thinking" is viewed by some as code for "condescension and elitism." This is another unfair judgment. No one owns a patent on thinking well. No one can keep this from you if you want it, regardless of age, income, education, or social status. Relying on critical thinking as a matter of daily routine is a personal choice. It is the attempt to get most things right most of the time. This is too useful, too vital now to be left to university philosophy classes or spurned as a sign of intellectual snobbery. Critical thinking is a collection of down-in-the-trenches people skills that are available to everyone (Harrison 2013b). It's about doing the work to figure out important things based on reason more than emotion and on analysis more than trust or tradition. It also means reevaluating conclusions and changing your mind when it makes sense to do so. Put simply, this is the conscious attempt to dodge lies and false beliefs while moving in the general direction of truth and reality. There is no more reliable safeguard against becoming someone's fool or the sad pawn of an empty fantasy.

This is on us, the grownups. Adults who see the value and need for teaching reason-based, independent thinking to all children must act. Push politicians, school boards, and parents to prepare children for the countless lies, irrational temptations, and cognitive landmines they will encounter in life. What else can we do? The U.S. government cannot outlaw the inclination to believe nonsense. Regulations won't purge the internet of every lie. Our brains are not going to suddenly evolve beyond their natural tendencies to lead us astray when it comes to perceiving and calculating reality. The answer lies with us. Teach our children thinking skills so that they can be their own editors and fact checkers. Children who grow up in this century must be their own guardians of truth. But they will fall short unless someone cares enough to teach them how. ·

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Life, the Quniverse, and Everything, Part 2: QManTrafficking and the 'Plandemic'

QAnon propagates misinformation and conspiracy theories about the pandemic and human trafficking and provokes and glorifies violence. It is dangerous and must not be casually dismissed.

STEPHANIE KEMMERER

Part 1 appeared in the March/April 2021 Skeptical Inquirer.

The cult of QAnon has emerged as one of the most dangerous ideologies of the past five years. Followers became quickly radicalized, awaiting a "Great Awakening" and fueled by a shifting narrative of the "Storm," awash in conspiratorial concepts. There is no true definition of what this "Storm" is or when it will happen, but the tumultuous year that was 2020 gave QAnon followers a treasure trove of possibilities.

The global pandemic has enhanced the ongoing culture wars in America and helped swell the ranks of QAnon. Some people already deeply enmeshed in QAnon began to see signs of the "Storm" in the pandemic, while those who were open to conspiratorial beliefs but not yet ready to jump into the rabbit hole found themselves pulled in by high levels of stress and uncertainty in 2020.

Even for those grounded firmly in reality, it was frustrating to hear the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) change their guidelines as the pandemic grew from bad to worse to seemingly apocalyptic. World leaders with authoritarian predilections, including Jair Messias Bolsonaro of Brazil, Xi Jinping of China, and of course Donald Trump in America, came to the fore amid the natural confusion surrounding any novel outbreak. Scientists were in a constant struggle to fight the virus, the misinformation about the virus, and the outright disinformation spewed by these world leaders. Trump directly interfered with the CDC throughout the pandemic and in July announced that the United States was withdrawing from the WHO. This was thankfully undone by President Joe Biden on Inauguration Day, January 20, 2021. Trump openly opposed any safety measures that affected the economy, contradicting the voices of legitimate scientists and even encouraging people to revolt against "lockdown" measures.

While the numbers of infected and dead rose, so did the ranks of QAnon followers. Confusion and uncertainty are the two main ingredients for conspiracy theories, and there was more than enough to spread around.

QAnon began to find new recruits in the form of anti-vaxxers, anti-maskers, and anti-lockdown protestors. Bill Gates became demonized in scores of "documentaries" that circulated online (and later were removed from YouTube). Many had one goal: to convince people that COVID-19 was a hoax and that it was not a pandemic but instead a "Plandemic" (see "Plandemic Conspiracy Goes Viral, Sells Books,"

SI, September/October 2020).

This played into the Q narrative perfectly. QAnon followers saw the "plandemic" as the perfect cover for mass arrests of the Hollywood elite pedophiles. The FBI was, they believed, using a fake outbreak to keep people at home while they were arresting John Podesta, Hillary Clinton, Joe Biden, Oprah Winfrey, and others.

Obviously, none of this makes any sense whatsoever. Bill Cosby, Jeffrey Epstein, and Harvey Weinstein were all high-profile people who were arrested without cover of a contrived pandemic. If any high-profile celebrities were going to be arrested for sex crimes, it would have been done just as it always has been. But every event, even ones that seem ridiculously mundane, have a different explanation in the world of QAnon.

Reports of tents to hold overflow patients in New York City hospitals led to rumors among the Q crowd that "mole children" were being liberated from the underground tunnels where they had been kept as secret sex slaves for years.

Most QAnon and Q-adjacent conspiracy theories that revolve around COVID-19 come down to the belief that hundreds of thousands of children are being kept locked up and tortured. In reality, there are children separated from their families and locked in cages, but these children number in the hundreds and are in the custody of immigration authorities—courtesy of Trump's harsh anti-immigration rhetoric. But to QAnon followers, these children either don't matter or don't exist.

The most frightening aspect of conspiracy theories is that there is often a kernel of truth to them, but these tiny truths are not terrible enough for conspiracists; they need to be beyond the pale.

Human trafficking is very real and very damaging, but the reality isn't even close to what QAnon believers claim. As for pedophile conspiracies, Jeffrey Epstein was an example of an actual rich, elite, hebephile who utilized his connections to avoid justice for years. Epstein was part of an actual conspiracy. But in the world of QAnon, Epstein was definitely murdered—by the Clintons, of course—taking an actual conspiracy and turning it into a wacky conspiracy theory.[1]

The circumstances surrounding Epstein's death have led to much speculation online. While the appearance of fractured hyoid bones, revealed by Epstein's autopsy, is typical with strangulation victims, there is no solid evidence that has been presented to demonstrate that Epstein was definitely the victim of a homicide.

The strangest aspect of QAnon and their Epstein narrative is their seeming avoidance of the topic. Epstein would appear to be proof for QAnon, but his connections to QAnon's hero, Donald Trump, present uncomfortable problems for the Quniverse.

Q has made mention of Epstein only thirty-seven or so times. One Q Drop talks cryptically about secret underground tunnels on Epstein's island. This is part of the Q narrative: to take that grain of truth—that sexual abuse occurred on the island—and weigh it down with fantastical imagining of secret underground tunnels. (It leads one to consider the possibility that conspiracists who imagine these things are just as sadistic as those they believe to be performing them would be.)

Therein lies the ultimate irony of QAnon and other ridiculous conspiracy theories: the conspiracy theory destroys and denigrates the grain of truth contained within it. The conspiracy theory becomes a conspiracy by distracting us from the truth.

Project MK-Ultra was an actual government mind control program run by the CIA. But this was not enough for the conspiracists. It was supplemented—primarily by a woman named Cathy O' Brien, who claimed to have been part of an ongoing mind control program called Project Monarch. While conclusive evidence exists that MK-Ultra was indeed real, no such evidence exists for O'Brien's claims.

The unethical Tuskegee Experiment has been folded into the narrative as well. Black men with syphilis were told they were receiving treatments for their disease. No treatments were ever given. The anti-vaccination movement has grasped at this historical travesty and utilized it to demonstrate why no citizen should ever trust Big Pharma or the government. To make these actual events more fantastical than they were—and they were beyond terrible—is an insult to those who were harmed because of them. It also makes the topic of legitimate conspiracies and wrongdoings a difficult one to discuss.

Source: worthavisual / Shutterstock.com

Some of the most outspoken debunkers of fake conspiracies, such as Mick West and Michael Shermer, are quick to note the existence of real conspiracies and the harm they have caused, demonstrating that one proven conspiracy does not equate to truth in all or any conspiracy theories.

Within the world of QAnon, there is further damage being done through the proliferation of these theories. Child abduction by strangers does indeed happen, but it is far rarer than the bogus statistics offered by QAnon followers suggest. In actuality, children are most often abducted by a family member—usually a parent involved in a custody dispute—or someone the child knows.

QAnon estimates that children go missing by the hundreds of thousands each year. These children end up as sex slaves who are harvested for their adrenachrome and then killed and cannibalized. As forensic pathologists know, bodies are not easy to dispose of, and it would be impossible for even some well-connected secret cabal to dispose of so many bodies unnoticed. Human trafficking is a very real thing, but again the numbers are nowhere near what QAnon states. The reality of human trafficking is far different from anything QAnon imagines.

Timothy Vasquez, an immigration lawyer from Ohio, is appalled by the rumors that QAnon has spread about trafficking. Vasquez says the most effective refutation of QAnon's trafficking claims can be found in the number of T Visas that are approved. T Visas are special visas available to immigrants who have been victims of trafficking, and Vasquez says, "T Visas are being denied at an astounding rate." The denial of these visas demonstrates that human trafficking is not being viewed by the government as a widespread threat. "The reality of trafficking is so different," he says, with the common misconception of the "sensationalized image like in the movie *Taken*. Oftentimes the trafficking victim doesn't know they're a trafficking victim." Vasquez says that the misinformation QAnon has presented about the topic of human trafficking has changed the public view of what trafficking is and how it occurs.

Vasquez says that Trump's inhumane immigration policies were "so hypocritical. These policies make it easier to traffick people because of the shame." Victims who have been groomed and taken advantage of are afraid to come forward, especially if they have been trafficked into the United States illegally. Human trafficking is defined far more differently than pop culture or QAnon would have you believe. Trafficking isn't always about the sex trade; it can also include people who have been brought into the country illegally and are forced to work for very little money under threat of being turned in to the authorities. The common myths about human trafficking—especially the hyperbolic fantasies of QAnon—have "really done a lot of damage for helping real victims," says Vazquez. Under Trump's hardline immigration policies, both legal and illegal immigrants have had a harder time finding safety in the United States.

QAnon followers have also caused damage in other ways. They tie up trafficking hotlines with tips about so-called

"mole children," while the people who are calling for legitimate help for themselves or for missing children are forced to remain on hold.

In addition, because of their unhinged thinking, it is not uncommon to find QAnon believers losing custody of their children to foster homes or Child Protective Services (CPS). In Colorado, Cynthia Abcug, a QAnon believer, lost custody of her son and, along with other QAnon followers, hatched a plan to kidnap him to get him back.

In Florida, QAnon follower Neely Petrie-Blanchard shot and killed Christopher Hallett, who was involved in the Q Adjacent "Sovereign Citizen" or "E-Clause" movement. This movement is categorized as a hate group by the Southern Poverty Law Center, which explains it thusly:

> At some point in history, sovereigns believe, the American government set up by the founding fathers—with a legal system the sovereigns refer to as "common law"—was secretly replaced by a new government system based on admiralty law, the law of the sea and international commerce. Under common law, or so they believe, the sovereigns would be free men. Under admiralty law, they are slaves, and secret government forces have a vested interest in keeping them that way. Some sovereigns believe this perfidious change occurred during the Civil War, while others blame the events of 1933 when the U.S. abandoned the gold standard.

Petrie-Blanchard met Hallett through their common belief in sovereign citizenship and is accused of turning on him and murdering him when his efforts to help her regain custody of her daughters had failed. She had also begun to believe that he was secretly working for the government.

This is not the first time a QAnon follower has been charged with murder, but it is one of the first QAnon cases involving accusations of murder and child custody. In March 2019 in Staten Island, New York, QAnon follower Anthony Comello was arrested for the murder of Gambino crime family member Francesco Cali. In a photo taken of the shooter at one of his court hearings, he is purposely revealing his palm with the phrase "Q sent me," scrawled on it. Comello was later declared mentally unfit to stand trial and was remanded to a state Office of Mental Health facility. According to an article

QAnon and the January 6 Capitol Insurrection

On January 6, 2021, as Congress gathered to certify the electoral votes that gave Joe Biden the presidency, a violent insurrection took place at the U.S. Capitol. Fueled by a speech President Trump gave shortly beforehand, a mob consisting of well-armed militia members, QAnon supporters, white supremacists, and MAGA Trump supporters stormed into the Capitol with minimal effort. Recent reports suggest that this event might have literally been an "inside job." Lauren Boebert, a U.S. Representative from Colorado, was live Tweeting House Speaker Nancy Pelosi's location during the event. Boebert had made announcements prior to the insurrection that she was planning on bringing her gun to the Capitol that day and declared that day to be 1776. Boebert is friendly with the QAnon crowd, and questions still surround her involvement in the attack on our democratic process. Claims were made that she was seen giving an unofficial tour to people wearing MAGA hats and shirts the day before the insurrection.

The most notable character from this incident was Jake Angeli, The Q Shaman, with his trademark LARPing Viking helmet and makeup. He has been a big name in what has been referred to as "the QAnon extended universe" by the hosts of the *QAnon Anonymous* podcast who have encountered him at multiple QAnon rallies and events prior to January 6.

This event demonstrated to the broader American populace what researchers into QAnon have been saying for years: QAnon followers are a dangerous, extremist group with high motivations and unquestioning faith; they were willing to do anything—even commit acts of violence and treason—to keep Trump in office. In typical fashion, social media platforms responded too late. They could have helped stop this years ago but waited until these violent actions forced their hands.

As a result of the insurrection, four rioters and one Capitol police officer lost their lives. Rosanne Boyland was carrying a "Don't Tread on Me" Gadsden flag and was ironically trampled to death. According to Snopes: "It's not yet clear whether the injuries she sustained by being trampled were what caused her death, or if her death was caused by something else, such as a medical emergency, which might also have prompted her to fall to the ground" (https://www.snopes.com/fact-check/rosanne-boyland-trampled-flag/). Another woman, Ashli Babbitt, died after being shot in the neck while trying to climb through a door with smashed glass inside the Capitol building. Babbitt was a hardcore QAnon supporter. Capitol Police Officer Brian Sicknick died in the hospital from injuries he sustained from the insurrectionists. Two other deaths were attributed to "medical emergencies." Three days after the riots, another Capitol police officer, Howard Liebengood Jr., who had been present at the event, took his own life.

Boyland and Babbitt fell into the rabbit hole and believed in QAnon so strongly that they ultimately died for it. They died for a fabricated lie because it had become their own reality. Make no mistake: they were traitors to this country and our constitution, but that does not mean we cannot look sadly upon their demise and see it as an immense tragedy. In the wake of the events of that day, Q remains quiet. Without Trump or Q, some of the QAnon followers were restructuring their narrative to claim Biden is Trump in disguise after undergoing surgery similar to that in the film *Face/Off*. Others started to post online about their doubts, and some were coming to their senses. But it is generally agreed that QAnon is not dead and may in fact persist for quite some time, reminding us once again of the sign cult leader Jim Jones had in his quarters in Guyana, borrowed from George Santayana: "Those who do not remember the past are condemned to repeat it."

—*Stephanie Kemmerer*

published in *The Intelligencer*, filings from his defense attorney state that "Mr. Comello became certain that he was enjoying the protection of President Trump himself, and that he had the president's full support."

These are just three examples of the violence QAnon provokes and glorifies. While all three perpetrators are currently jailed, another Q-related murderer has been released on bail with the help of former 1980s sitcom child actor Ricky Schroder.

The seventeen-year-old who shot and killed two people in Portland in 2020 is being represented by a QAnon lawyer. It is unclear whether or not the shooter himself is a QAnon follower, but his attorney, L. Lin Wood, is. Wood was thrust into the spotlight after the 2020 election. The motive behind the murders appears to be related to racist ideology rather than QAnon, but again we see QAnon playing a role—this time indirectly—in a murder.

If you are beginning to see a pattern, it is very real and

very dangerous—unlike the imaginary patterns conspiracists see. QAnon purports to want to "save the children," while its beliefs and radicalized methods of thought are damaging children and leading to murder.

Even more astounding and ironic is the fact that 8Chan (now 8kun), the message board that became the primary source of "Q Drops," has been home to posts containing child pornography. In December 2020, a QAnon politician, Ben Gibson, who had been a candidate for Congress, was arrested on four counts of possessing child pornography.

QAnon does not save anyone—certainly not children—and it does nothing to help real victims of sexual abuse or human trafficking. QAnon is very dangerous and must not be taken lightly. It is a shameful aspect of current American conspiracy culture, but it cannot be ignored. This is a movement in which followers are so brainwashed into believing they are "digital soldiers" that they are ready to become soldiers in real life too.

Facebook and Twitter are finally acting to ban groups and accounts linked to QAnon, but this action comes too little, too late. Twitter has been decidedly more active and responsible while Facebook falls back into its usual promise to do better in the future.

There is a downside to these measures: Toward the end of 2020, QAnon followers began migrating to Gab and Parler, fringe social media platforms that were practically unmonitored and tout themselves as champions of true free speech. These sites have become a slimy stew of misogyny, bigotry, homophobia, transphobia, fascist and neo-Nazi rhetoric, white supremacy, and violence. Now QAnon followers are mingling with the Boogaloo Boys and Proud Boys, and the three different hate groups are beginning to adopt each other's beliefs.

On January 11, 2021, shortly after the Capitol Insurrection, Amazon, Google, and Apple removed Parler from their app stores, essentially shutting it down temporarily. Parler found a new home through the domain host Epik. This hosting company also hosts Gab and The Daily Stormer, an American neo-Nazi message board.

Scores of legitimate journalists covered Parler, and many posted on Twitter terrifying and unhinged screenshots collected there. One shows a December 12 post from Milo Yiannopoulos (himself a purveyor of hate speech) that reads: "If you're still a Q believer, please kill yourself. Many thanks." To which another Parler user replied, "How about we kill you instead?"

People make threats online all the time, but from a legal perspective each one needs to be investigated and taken seriously in every instance. In most instances, while still illegal, these threats are found to be nothing more than words. But with QAnon there is a more real and likely threat.

Even though Joe Biden was inaugurated as the forty-sixth president on January 20, 2021, and even though Q has not posted since December 8, 2020, QAnon is not going away any time soon. While it is unlikely that many QAnon people can be talked out of it through logic and reason, we must become our own version of "digital soldiers" and combat their misinformation at every turn. We might not be able to save many who are already down the rabbit hole, but we may be able to stop a few who are curiously peering into it. ·

Note

1. The phrase "conspiracy theory" is often confused with the word *conspiracy*. For clarification, a conspiracy theory is unfounded and unproven, while a conspiracy can be proven with solid evidence. For example, the proven conspiracy to attack on September 11, 2001, involved Middle Eastern hijackers, whereas the conspiracy theory throws the U.S. government into the mix as accomplices.

Acknowledgments

Special thanks to immigration lawyer Timothy Vasquez for his interview and to Valentina Restrepo-Montoya of The Florence Project for additional information on immigration.

Further Reading

For those seeking further information on QAnon and strategies for debunking it and helping followers, I recommend the following sources:

The QAnon Casualties (subReddit) discussion group on Reddit: https://www.reddit.com/r/QAnonCasualties/

The ReQovery (subReddit) discussion group on Reddit: https://www.reddit.com/r/ReQovery/

"Trump Finally Gave QAnon What It Always Wanted: Respect," by Travis View. *The Intelligencer* (December 29, 2020), https://nymag.com/intelligencer/2020/12/trump-gave-qanon-what-it-always-wanted-respect.html

Escaping the Rabbit Hole: How to Debunk Conspiracy Theories Using Facts, Logic, and Respect by Mick West

The Cult of Trump: A Leading Cult Expert Explains How the President Uses Mind Control by Steven Hassan (I recommend the Audible version which includes clips of Trump's speeches.)

The *QAnon Anonymous* podcast hosted by Jake Rockatansky, Julian Feeld, and Travis View

The *ConspiracyLand* and *Skullduggery* podcasts, both hosted by Michael Isikoff and Daniel Klaidman

The *Conspirituality* podcast hosted by Derek Beres, Matthew Remski, and Julian Walker

The *Q Clearance* podcast hosted by Jake Hanrahan

The Freedom of Mind Resource Center, founded by Steven Hassan, www.freedomofmind.com

Metabunk, created by Mick West, www.metabunk.org

Even the Podcast Is Afraid did a two-part episode on QAnon: "Bad News on the Doorstep" and "The Wheel of 4Chan"

The Southern Poverty Law Center's page on The Sovereign Belief System, https://www.splcenter.org/fighting-hate/extremist-files/ideology/sovereign-citizens-movement

An excellent resource for immigration and trafficking information is The Florence Immigrant & Refugee Rights Project, www.firrp.org

Thought Reform and the Psychology of Totalism: A Study of 'Brainwashing' in China by Robert Jay Lifton

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Down with Science—but Why?

Public disbelief in science manifests itself broadly. The underlying reasons are manifold.

PETER LANTOS

I had lunch with an old friend of mine and happened to mention my unhappiness with the situation involving global climate change. Specifically, I lamented that the United States had at the time opted out of any concerted action to get a handle on the problem. James, my friend, told me not to worry because there is no global climate change; there is no global warming. I was flabbergasted, because I know that there is a major problem that needs attention here and now. James is a pretty savvy person, yet he believes there is no problem and that nothing needs to be done.

A few days ago, my niece Harriet stopped in for tea, and I inquired as to how her little one is doing. She has a six-year-old daughter about to enter first grade. Harriet complained that the school requires vaccinations for polio, smallpox, measles, and some other serious ailments, and she is afraid that the vaccinations may result in autism for her little Alice. I tried to tell her that this is a fairy tale, but Harriet is convinced that her fears are grounded in fact and there isn't a chance that little Alice will be vaccinated.

I attended a lecture on genetically modified food; the speaker was a recognized authority on food science. He told us that such food holds out several advantages and that it is perfectly safe for human consumption. The young man sitting next to me muttered under his breath: "Absolute nonsense. GM food should not be eaten."

I have to ask myself: Am I completely out of touch, or is the rest of the world? Admittedly, I have dealt here with a small segment of the population, but it seems to be representative of a much larger one, one with which I am in disagreement. Whether it is the fact that part of the population will not wear protective masks or believes UFOs are evidence of aliens, I find myself in opposition to those holding forth on the subject. I cannot help but wonder: What is wrong here?

The answer I come up with is that there is a common denominator to all this, and that commonality is disbelief in science and the rejection of science and disbelief in scientists on a global scale, but especially in the United States. So that changes the questions that preoccupy me: Why the rejection? Why the disbelief in science?

Over one-quarter of the world says they are suspicious of the role of science, and that number grows to one-third in the Unites States. People are becoming increasingly distrustful of science; they express doubts about the validity of scientific findings. One hears popular slogans, such as that the scientific method doesn't work; science has an agenda; science is unreliable. Not surprisingly, scientific institutions and journals express their concerns about the public's increasing distrust in science. They point to a 2012 survey by the National Science Foundation, which found that one-quarter of the American respondents believe that the Sun orbits Earth, or an AP-GFK poll (Medrigal 2014), which noted that half of the population does not believe in the big bang and that four out of ten American adults doubt evolution. And there is a large following of those who believe the earth is flat.

So, again: Why is it that so many Americans reject scientific findings and theories? Once I began to examine this, I noted that there is no single explanation. The underlying causes are, regrettably, manifold.

One basic reason: we tend to believe what we hear or learn when we are young. The girl, told at an early age that sex is a necessary evil, will most likely grow up acting on that belief. In elementary school in Hungary, we were often reminded that the residents of neighboring Romania were dirty peasants whose animals lived with them in their houses; I believed that for a long time. So a child, whose mother had a bad encounter with vaccination (her niece was vaccinated for measles and subsequently developed mumps) and therefore informs everyone in sight, including her children, that vaccination is evil, that child—as an adult—will likely believe someone who proclaims that there are untold evils associated with vaccination, including becoming autistic. And the child growing up in a family where the father proclaims that the earth is flat will probably believe that as well.

The impressionable child believes and acts on what he or she encountered, saw, heard, and was taught during the formative years. If, as part of being opposed to vaccination, that family has developed a distrust for science, that child is likely to become an adult with disbelief in science—and that disbelief can be firm. According to Leon Festinger, a man with a conviction is a hard man to change (Mooney 2011). Tell him you disagree, and he turns away. Show him facts or figures, and he questions your sources. Appeal to logic, and he fails to see your point.

Related to the influence of childhood environment is peer pressure. Many people, if not most, crave approval, especially approval by one's peers. Whether it is a young boy who wants to fit in or an adult whose buddies proclaim that global warning is a hoax, there is a universal desire, conscious or subconscious, to be part of the team, to go along with the group.

Indeed, there's a sense in which science denial could be considered rational in certain conservative communities, explains Yale's Dan Kahan (Mooney 2011). Holding certain beliefs is a condition of belonging to cultural groups. Adopting a position contrary to your peer group can threaten your social status while having little effect on the collective opinion. People who say "I think there's something to climate change" will be marked as a certain kind of person, and their life is going to go less well in their community. A study by Kahan (2015) found that what people say they believe about global warming is not a measure of how much they know or even how worried they are about it; it is instead an expression of their cultural identities. If on top of that a celebrity endorses a belief, that helps seal the deal. Those who believe that vaccination is dangerous are supported in this by environmentalists such as Robert F. Kennedy Jr. and Hollywood celebrities such as Jim Carrey and Jenny McCarthy, and this makes it easy to take a position against vaccination.

Political ideology is seen by many researchers as a significant culprit of science denial. In Russia, biologist Nikolay Vavilov was denounced, persecuted, banned, and starved to death for espousing genetics, which did not fit with the then-accepted politics of the Soviet Union. Sociologist Gordon Gauchat has shown that political conservatives in the United States have become more distrusting of science, a trend that started in the 1970s (Tsipursky 2018). And a swath of recent research conducted by social and political psychologists has consistently shown that climate-change denial in particular is typically found among those on the conservative side of the political spectrum (Dunlap et al. 2016; McCright and Dunlap 2011).

However, there is still more to science denial. Religion can play a role. Throughout history, religion has frequently stood in the way of science to maintain the status quo, so as not to be confronted or accosted. Galileo was accused of heresy because he opposed the teaching of the Church that Earth is at the center of the universe. Where some religions date Earth as a few thousand years old, scientific evidence suggests more like billions of years as its real age. But if your religion taught the former, you might be reluctant to admit to the latter. If religion has taught that humanity began with Adam and Eve, it will be difficult to accept the theory of evolution. If you have moral concern about the naturalness of vaccination, you will reject information about its beneficial effects. Challenging an existing, embedded belief and being confronted with an unwanted truth result in rationalizing disbelief in science.

Challenging an existing, embedded belief and being confronted with an unwanted truth result in rationalizing disbelief in science.

Having a vested interest in a position has also been a major factor in denying science. The person who denies global warming and the idea that it is largely man-made finds that this science is an inconvenient truth. It is inconvenient for those who own a coal mine or work in one. It is inconvenient for the real estate agent who cannot sell property in an endangered region. It is inconvenient for those who produce or refine oil, ship oil products, or even use any of the fossil fuels. The fossil fuels have worked well and are affordable. Why rock the boat? The change to renewable source fuels will cost money, and that is not just inconvenient but to some unaffordable. It is easier to deny global warming than to make this major change. Avarice, personal pride, and greed can combine to deny science.

A confirmed smoker has a vested interest in not accepting the science that smoking causes lung cancer because he would have to give up smoking.

While none of this rejection of science makes sense, one of the worst offenders is in the case of COVID-19. Science has pointed to a clear path for control of the pandemic, and there have been understandable, though wrong, reasons for its rejection:

"*You must wear masks!*" If a political leader rejects that, many followers will do likewise. And if someone thinks that the mask makes them look silly, not only will they not wear the mask but they will conjure up scenarios that the mask is harmful.

"Keep social distance!" A significant number fall back on good old American freedom. Nobody is going to tell them what to do. They proudly proclaim that maybe the masks are okay, but they will not be told whether to wear masks or not and whether to stay far from others. Maybe distancing is beneficial, but don't tell them what to do or how to behave. After all, this is a free country! Also, most of the participants in the crowded events are relatively young, and they feel invincible; the virus is for others, not for them. To not be able to interact with a bunch of buddies, have a pajama party, or have a beer with the gang is too much to ask. Not only that, but doesn't the U.S. Constitution guarantee the right to assembly? They feel that they have a limited time to "do their thing," virus and science be damned. There is also another undercurrent: if the leadership does not wear masks, people will demonstrate their support of the leader by also not wearing masks. All these make it easy to ignore the counsel of the scientists.

The leadership, e.g., the government, has some of the world's best medical scientists who have been very direct with advice: wear masks and observe social distancing. Why then did the leaders of the previous administration choose to ignore this advice? To reject the science regarding the correct course of action?

Initially, the Trump administration underestimated the pandemic. The first proclamations were to the effect that it is a minor inconvenience and that just a few people were getting the virus. When it turned out that large numbers were getting the virus, the government proclaimed that it will all soon blow over. With that kind of a record, how could the officials then acknowledge the magnitude of the pandemic by observing the cautioning of the medical scientists? The only thing a self-confident official could do was to minimize it and proclaim that no special steps are needed to protect either self or others. The result: rejection of wearing masks and social distancing. The reason: a case of the president trying to save face.

The internet has enabled anyone to be a publisher of content, connecting people around the world with any and all sources of information. On the one hand, this freedom is empowering and liberating. Wikipedia is an example of an accurate source of information on a vast number of subjects. On the other hand, anyone can publish a blog or post on Twitter to make false claims about links between vaccines and autism, claim that the earth is flat, or deny global warming. If they are skilled at search engine optimization or have money to invest in advertising, they can get their message spread widely and rapidly—whether true or false or even evil.

Then we have those who can profit from contradicting the scientists. Environmental regulations can be seen as economically harmful restrictions on industry, although they can be the driving force behind new products and processes that help in complying with those regulations. In a more sinister form, the person who selects a major ongoing issue and takes a position contrary to that given by science can gain an immense following of believers (and contributors) and is aided in this by the relatively new social media that make it easy to disseminate information, whether true or false. Individuals are able to point to a personal experience, provide false testimony, create stories, or form a nonbeliever group in pursuit of financial gain. Even the news media can be participants here: they have a natural tendency to give attention to mavericks, naysayers, and professional controversialists, and some would also have you believe that science is full of shocking discoveries made by lone geniuses.

There is at least one more factor to consider: the scientists themselves. One of the most worrying causes of disbelief in science is Americans' lack of trust in the scientists. The scientists do contribute to the disbelief, though unintentionally. For one thing, some are prickly, and some are difficult to understand, because they talk the language of science rather than the language of the public. This is a major problem. Another issue is that the source of funding of their studies may have a seeming conflict of interest—indeed sometimes a real conflict—and the public may conclude that all studies entail conflicts of interest. The news media, to gain readership, will emphasize these conflicts, and this will result in further erosion of the scientists' credibility. The result: when someone is unable to attack the scientific finding, they will attack the scientist.

There are numerous reasons for disbelief in scientific findings. Some reasons are inherent in human behavior and human psychology; some in vested interests, greed, and pride; some in political ideology or religion. And if none of that works, one can always attack the messenger.

Understanding why people distrust science will go a long way toward understanding what needs to be done for people to take science seriously. Several sociologists have recommended at least one way of ameliorating this problem: Do not try to out-argue the disbelievers, present "the truth," or present citations for one's scientifically correct position. Instead, engage the other party in genuine dialogue. To explore their position and genuinely attempt to understand it, discuss it and attempt to show why perhaps it is not scientifically correct.

Maybe there is hope. Maybe. ·

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Aromatherapy: 'Healing' by the Scents of Smell

Aromatherapy is just another New Age pseudoscience that doesn't pass the smell test.

JOE NICKELL

What is the difference between a *scented* candle and an *aromatherapy* one? Answer: About ten dollars. Joking aside, ordinary fragrant materials supposedly become imbued with healing power when—well, when they are sold for that purpose. Aromatherapy is the pseudoscience of using aromatic substances for claimed improvements to one's physical or mental health. However, medical evidence is lacking that aromatherapy is beneficial in preventing, treating, or curing any disease—other than by the ubiquitous placebo effect.

History

Aromatherapy has its roots (no pun intended) in the ancient herbal practices of early civilizations, including the Chinese, Egyptians, Romans, and others. Certain aromatic plants seemed to offer benefits—for example, peppermint as a tea to soothe digestive upsets, myrrh as a spice for burial wrappings, and frankincense for holy anointing (Farrer-Halls 2005, 302–303; Nickell 1998, 37–38; Wilson 2003, 17). However, herbal uses do not constitute aromatherapy.

Essentially (pun intended) the use of *essential oils*—volatile natural oils that impart to plants their characteristic odors—foreshadowed the practice of aromatherapy. Whereas ancients had used the oils in cosmetics, perfumes, salves, and ointments, and Hippocrates reportedly advised the use of scented massages (Essential Oils Academy 2019), aromatherapy actually developed only in the past hundred years.

It was advanced by an incident in 1910 involving a French chemist and perfumer, René Gattefossé (1881–1950). He burned his hands in a lab accident, and gas gangrene rapidly developed. However, he rinsed the burns with lavender essence, whereupon healing began the next day. In 1937, he published his classic work, *Aromatherapie*, coining that word ("Real Story" 2016).

It remained for essential oils to be combined in the 1960s with certain massage techniques (i.e., "intuitive" and Swedish), and this led to today's practice of aromatherapy as a so-called healing art (Farrer-Halls 2005, 10).

Claimed Effects

Aromatherapy's reliance on essential oils raises other issues. With characteristic insight, Harriet Hall (2013), known as "The SkepDoc," observed that "so many of the oils are supposed to do the same things."

Consider, for example, a small aromatherapy kit containing just seven essential oils. Four (clary sage, orange, lavender, and chamomile) promise very similar effects summed up by the word *calming* (e.g., "soothes, calms," "eases anxiety," etc.). All four are said to have "sedative" properties. The other three (peppermint, rose, and rosemary) are billed as "stimulating" or

"uplifting," etc. How does someone decide which to employ?

At the same time, aromatherapists promote specific *mixtures* of oils for a variety of alleged purposes: to treat everything from an itchy scalp, troubled skin, and sore muscles to the control of pathogens and management of hunger. One blend is even touted for its purported anti-aging power (Hall 2013). (See also, Susan Gould, "Essential Oils: One Weird Workshop," SI, November/December 2018, and Lynn McCutcheon, "What's That I Smell: The Claims of Aromatherapy," SI, May/June 1996.)

Power of Suggestion

Countless beneficial uses for aromatherapy are claimed, and two main mechanisms are cited to explain the purported effects: (1) how aromas affect the brain's limbic system (which deals with emotions, memories, and stimulation), and (2) direct pharmacological effects of the applied essential oils ("Aromatherapy" 2019). However, I believe we must add one more: body massage, because that is the main method (in addition to aerial diffusion, direct inhalation, baths, etc.) by which essential oils are applied. The massage itself may have a soothing, stimulating, or other effect that is equal to or greater than the effect of the chemistry of the oil or the mere fact of its application. According to Farrer-Halls (2005, 11, 121), "Massage is the best way to release physical tension."

The use of massage therefore raises the broader issue of suggestion. *The Aromatherapy Bible* asserts that two drops of lavender simply rubbed into one's temples "relieves headaches," but is it the fragrance, the rubbing, or—as I strongly suspect—the *suggestion* that effects the relief? Similarly, orange merely used in "local massage and compresses" is allegedly good "for settling digestive upsets," and clary sage applied in a bath supposedly "relaxes mind and body" and "eases pain." Peppermint—long used, as we have seen, to relieve digestive upsets—does so even "massaged over the abdomen in a clockwise direction" (Farrer-Halls 2005, 273, 295, 302, 319). But are there any blinded comparative studies for *counterclockwise* massage?

Again, rose "comforts the heart in grief." How do we know? Why, it is "associated with the heart chakra" (Farrer-Halls 2005, 259). Thus, pseudoscience is used to support other pseudoscience. Chakras are (nonexistent) "energy centers" through which allegedly flows the (nonexistent) "universal life force" called *chi* (Farrer-Halls 2005, 254–262; Guiley 1991, 86–88, 625; Nickell 2017, 20–22). (Incidentally, in addition to chakras, aromatherapy is also touted to work in conjunction with crystal healing, astrology, aura cleansing, and other "alternative" therapies, including, as mentioned, massage techniques [Farrer-Halls 205, 160–167, 252–253, 263–267].)

Still many other essential oils may work mostly—or entirely—by suggestion. Of the seven in the kit previously mentioned, we have looked at five; here are the other two: Rosemary is claimed to improve memory, for example, when a drop is mixed with two drops of oil of neroli (bitter orange) flowers and "dabbed on the wrists"—say before taking a test. (The neroli is supposed to calm one's nerves; see Farrer-Halls 2005, 293–294.) Finally, Roman chamomile is said to relieve the cramps and mood swings of menstruation when used in baths, with compresses, and even as "mood perfumes"—all methods that seem indistinguishable from suggestion, i.e., the placebo effect at work.

The Evidence

Quackwatch webmaster Dr. Stephen Barrett (2001) sums up the evidence: "Pleasant odors can be enjoyable and may enhance people's efforts to relax. However, there is no evidence that aromatherapy products provide the health benefits claimed by their proponents."

Good medical evidence is lacking to show that aromatherapy can either cure or prevent a single disease. In 2015, Australia's Department of Health published a review of "alternative" therapies, seeking to find whether they were suitable for health insurance coverage. Aromatherapy was one of seventeen evaluated therapies that lacked clear evidence of effectiveness. Many other reviews likewise report an absence of evidence for aromatherapy as a treatment. Large, well-designed, suitably randomized, and controlled trials are lacking. Moreover, there are studies showing that some essential oils may actually be toxic to humans ("Aromatherapy" 2019).

The conclusion that aromatherapy is simply just another New Age pseudoscience seems unlikely to change. Its theories and practices—as have frequently been pointed out—fail to pass the smell test. ·

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Creationist Funhouse, Episode Six

God the Biotechnologist

STANLEY RICE

To God, biotechnology must seem like child's play. Previously in this series, I have explained how, in order to conform with creationist beliefs, God had to manipulate all the rocks and fossils, and even the light from distant galaxies, to make a young, miraculously created universe *look* like an old, evolved one. But perhaps his most amazing accomplishment is that he manipulated the DNA of every species of organism in the world to make it look as if evolution has occurred. Take *that*, Francis Collins and Craig Venter!

DNA is the molecule found in almost every cell that stores the genetic information telling the cell what to do. Nearly every chemical reaction that occurs in every cell of every organism is controlled by enzymes, whose structure is encoded in the DNA. All the structures, from fins to feathers, from guts to nuts, and everything that happens inside them, is controlled by the DNA of the genes.

DNA encodes information in the sequence of the four bases A, C, T, and G (let's skip the chemical names). That is, it uses an alphabet of four letters. What this means for evolutionary studies is that, when a certain gene is shared by more than one species, the similarity of structure of the genes can be calculated by comparing the base sequences.

Some genes are found in nearly every species of organism. An example is the group of genes that code for *hexokinase*, which is the enzyme that controls the very first step in the metabolism of the sugar glucose. This is a reaction that occurs in nearly all cells, from bacteria to plants to humans. Other genes occur in a more limited range of organisms. For example, the genes for the enzyme *rubisco* that functions in photosynthesis are found only in photosynthetic bacteria, algae, and plants. Some genes, such as those that control the development of the large cerebral cortex in the human brain, may be unique to our species.

There is an evolutionary pattern to the DNA, in two ways. First, species that are more similar to one another share more of the same genes than do species that are less similar, as in the examples above. Second, the base sequence of shared genes is more similar in closely related species, such as different species of primates, than in distantly related species, such as mammals and insects. Humans are about 98 percent genetically similar to chimpanzees; less similar to gorillas; even less similar to monkeys; even less similar to cows; and so on. The same is true of DNA sequences that, while not themselves genes, control the expression of genes.

From a creationist perspective, God made all the different species, and each of them has different anatomy and physiology. If this is so, then similar species would have similar genes, and dissimilar species would have dissimilar DNA. Their anatomy is different, their physiology is different, so their DNA must be different as well. No surprise here.

What *is* surprising is that your chromosomes carry not only the genes that you use but also genes that have been deactivated. You do not use them, but they were used by your evolutionary ancestors—which, therefore, you had. These in-

activated genes are called *pseudogenes*. You could call them fossil genes or dead genes. This means you carry around fossil evidence for evolution inside your chromosomes!

One interesting example is *olfactory pseudogenes*. Olfactory genes code for the proteins that bind with and recognize volatile chemicals in the air. These proteins allow the sense of smell and are found, not surprisingly, in the noses of animals. This is not the same as the tongue's sense of taste, which is limited in humans to salt, sweet, sour, bitter, umami, and (believe it or not) water. When you have a cold, you lose your sense of smell, not taste. Most flavor is scent, not taste, and we have our olfactory proteins to thank for this.

Mammals have about a thousand olfactory genes. Mice have about 1,200 olfactory genes. About 25 percent of these genes have been inactivated; they are pseudogenes. So mice use about 75 percent of their olfactory genes. Humans have about 850 olfactory genes, of which we use only 45 percent. That is, about 55 percent of these genes have been inactivated. This suggests that mice can distinguish about twice as many scents as we can, whether they are simple scents, such as vanilla, or more complex mixtures of odors, such as chocolate. Olfactory sensitivity results not only from how many kinds of olfactory proteins an animal uses but also how many of each the animal has. Even for sets of molecules that both humans and dogs can smell, dogs can smell them at much lower concentrations than we can, because they have more receptors—fifty times as many as we have.

How did the olfactory pseudogenes get there? The only reasonable explanation is that our evolutionary mammal ancestors had and used over a thousand olfactory genes, but in our evolutionary lineage many of them have since become inactivated. This is because most mammals navigate the world using scents, but many primates rely primarily on sight to find food. When random mutation inactivated an olfactory gene, making it into a pseudogene, it didn't make as much difference to a primate as to, for example, a dog.

But what if you did not evolve? Then it must have been that God created not just your living genes but also slipped a bunch of dead pseudogenes into your chromosomes as well. And not just any dead genes, but dead genes *that more closely resembled those found in species similar to you than in species different from you.* Just as your genes more closely resemble those of a chimp than of a dog, so also do your pseudogenes. This would be odd, from an anti-evolutionary viewpoint, because if a pseudogene has any function at all, that function is unrelated to its original base sequence.

Consider the example shown in the illustration below. It shows six pseudogenes found in primates. One of them, the one that is estimated to be 36 million years old, is found in all six species. Two other pseudogenes, the ones that originated 21 to 25 million years ago, are found in apes and Old World monkeys. Capuchin monkeys, being New World monkeys, do not have them. The New and Old Worlds had already separated by that time by continental drift. The 19-million-year-old pseudogene is found only in apes, which are found only in the Old World. The two youngest pseudogenes are found only in humans, chimps, and either gorillas or orangutans. Creationists have no explanation for this pattern, which perfectly fits what is known from evolutionary history.

The main way that complex cells get rid of old genes is by making them into pseudogenes rather than by cutting them out and throwing them away. DNA is digital information, just like that on a computer disc. When you delete a file on a computer disc, the file is still there. The only thing that has been deleted is the little bit of code that tells the computer where to find the file. The file is still there, lost and inaccessible to everyone except the FBI. The human genome, just like your hard drive, carries around a lot of useless, and generally inaccessible, old files.

In addition to the olfactory pseudogenes, your chromosomes contain hidden DNA sequences for hairiness (the hHaA pseudogene) and for a tail (the WNT3A pseudogene). The reason most mammals are hairy and you are not (well, most of you) is that a DNA sequence that codes for hairiness is very active in other apes and less active in you. The reason you do not have a long tail, even though all mammals have

Pseudogenes in six species of primates

Pseudogene	Estimated age (millions of years)	Human	Chimp	Gorilla	Orang-utan	Rhesus monkey	Capuchin monkey
α-Enolase Ψ_1	11	•	•	•			
AS Ψ_7	16	•	•		•		
CALM II Ψ_2	19	•	•	•	•		
AS Ψ_1	21	•	•	•	•	•	
AS Ψ_3	25	•	•	•	•	•	
CALM II Ψ_3	36	•	•	•	•	•	•

Humans share all the same pseudogenes with chimps, with whom we share the most recent common ancestor; we share fewer with Old World monkeys and even fewer with New World monkeys. From Friedberg, Felix, and Allen Rhoads. 2000. Calculation and verification of the ages of retroprocessed pseudogenes. *Molecular Phylogenetics and Evolution* 16 (2000): 127–130.

You smell SO good, Eve!
Thanks, Adam! I didn't think you'd notice.
How could I not notice, woman? I've got a thousand olfactory genes!

Credit: Loraine Thompson

genes for it, is that your tail genes are less active than it is in apes and other mammals. Monkeys have long tails, while you just have a coccyx.

But the inactivation of genes takes time. To fit into a creationist time scale, God had to put inactivated hair, tail, and olfactory genes right into Adam and Eve.

There is another possibility. A creationist might say that maybe, just maybe, Adam and Eve used these genes but the genes were subsequently inactivated, perhaps at the time of The Fall. Try to imagine this conversation between Adam and Eve:

"Hey, Eve. Nice tail!"

"You too, guy."

"And your furry back. It drives me wild, woman!"

Even spookier than this is human endogenous retroviruses, or HERV. Today, there are some viruses that can insert themselves into our chromosomes. The most famous one is HIV. Hidden inside chromosomes, the HIV genes can trick your cellular machinery into making more HIV viruses. Sometimes, such viruses can get into the germline and get passed on from one generation to the next. But if they do so, they are likely to be degenerated. They are still there but cannot spread. They just sit in chromosomes and get copied over and over. They are viruses that your evolutionary ancestors had—ancestors that you, therefore, had. HERV now make up 5–8 percent of your DNA, which is at least as much as your actual genes. Your chromosomes carry not only fossil genes but fossil viruses. Why would God have put them there? The Bible doesn't say anything about them.

Those pseudogenes came from somewhere. To a creationist, either God had to slip them in after he created all the genes or else he had to inactivate a lot of the genes that he had originally created. And he had to do this in a way that made your pseudogenes more closely resemble those of apes than of monkeys, of monkeys than of dogs, of dogs than of birds, of birds than of fish, of fish than of plants. And none of this amazing biotechnology is mentioned in the Bible. It is all creationist imagination.

Pseudogenes are just *vestigial* genes. For centuries, scientists have known about vestigial organs, structures that appear to serve no function in a modern organism, although they functioned in the organism's evolutionary ancestors, which they, therefore, had. Examples include the human appendix, which is an atrophied version of the caecum that is much larger in other mammals. Floral staminodes are also vestigial. The stamens of flowers produce pollen in a sac on a stalk; the staminode is just the stalk. *Vestigial* does not necessarily mean *useless.* The appendix might be useless. Chances are, if you have had yours surgically removed, your ability to get along in life has not been appreciably diminished. But staminodes, while sterile, are not useless. They can be colorful and help a flower to attract pollinators.

Let me end with one of the most interesting examples of a phenomenon that can be reasonably explained only by evolution. Modern birds do not have teeth, although they may have ridges on their beaks that allow them to hold onto food items. A beak is, more or less, hardened gums. But they do have pseudogenes for teeth. Decades ago, two scientists figured out how to reactivate tooth pseudogenes in a chicken. The result was a chick with teeth—the first bird in sixty million years to have teeth. The teeth did not emerge through the beaks, but they were there, and you can see a picture of one of these teeth in the February 29, 1980, issue of *Science*. Creationists believe that God made all the birds. Some of them, now extinct, had teeth. But why do the others have tooth pseudogenes? Did God put them there just to trick us into believing in evolution?

Once again, the conclusion is not simply that "creationists are wrong," which we already knew. Rather, I hope to open your eyes to fascinating new things. Until I studied pseudogenes, I had no idea that I was carrying around fossils inside my own chromosomes.

In the next article, we will explore another evolutionary oddity that, from the creationist viewpoint, has no reason to exist and the adventure that led biologist Lynn Margulis to discover it. ·

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A Longitudinal Study of 'Ideological' Bias in Research of 'Alternative Medicine'

A comparison of the published conclusions of one acupuncture researcher during two different ten-year periods—the first carefully supervised and the second not—shows that positive conclusions came only in the second situation. This seems a frequent phenomenon in SCAM research.

EDZARD ERNST

Dr. Adrian White was my coworker from about 1994 until 2005 in the Department of Complementary Medicine at the University of Exeter. He became a trusted colleague and eventually the deputy head of my department. When I discovered that my trust had been misplaced, I did not extend his contract (for details, see my memoir [Ernst 2015]). Subsequently, White got a post as the senior research fellow at the department of general practice, where he continued his research into acupuncture for another ten years.

White had always been an acupuncturist at heart (in fact, I had never before met anyone so utterly convinced of the value of this therapy). When he joined my team, he was scientifically naive, and we spent many months trying to teach him scientific methodologies and how to think like a scientist. Initially, he found it very difficult to be critical about acupuncture. Later, I assumed the problem was under control. Yet most of his research in my department was guided and supervised by me. I tried to make sure that all our studies were testing rather than promoting so-called alternative medicine (SCAM; Ernst 2018) and that our reviews were critical assessments of the published evidence. After White left my unit, he was able to work mostly without supervision.

Thus, there exist two separate and well-documented periods of a pro-acupuncture researcher: ten years guided by me and members of my team and ten years largely unsupervised. The aim of this analysis is to compare these two periods.

Methods

I conducted a Medline search of White's publications on acupuncture and selected those articles that reported factual new data. The endpoints for my analysis were the directions of the conclusions of White's papers. I therefore extracted, dated, and rated the conclusions of the included articles as follows:

P = positive from the point of view of an acupuncture advocate.

N = negative from the point of view of an acupuncture advocate.

P/N = not clearly pointing in either direction.

To render this exercise transparent (occasionally, I was not entirely sure about my ratings), I copied all the conclusions and provided links to the original papers so that anyone interested would be able to check my judgments.

Results

The Medline search identified 120 papers authored by Adrian White on acupuncture. Of those 120 articles, fifty-two fulfilled the inclusion criterion of reporting factual

new data. They were mostly clinical trials and systematic reviews. These publications were distributed almost equally within the two ten-year periods. Articles 1–27 were published after White had left my department; articles 28–52 were from the time while he worked with me.

Considering that one would not expect unbiased studies or reviews of acupuncture to generate mostly positive conclusions, the findings are remarkable.

After White had left my department:
0 times N
5 times N/P
22 times P
While White was working in my department:
17 times N
7 times N/P
0 times P

From these figures, it is easy calculate the ratios for both periods of negative : positive conclusions; they are zero versus infinite.

Figure 1 depicts the positive and negative conclusions of all of White's articles over time. A sample of six of White's conclusions appears in Table 1. A full list of the fifty-two conclusions can be found on my blog at https://edzardernst.com/2021/01/a-demonstration-of-a-powerful-non-financial-conflict-of-interest-in-scam-research/.

Discussion

White's case might be unique, because it allows us an observation of bias over two decades. It demonstrates that an ardent believer in acupuncture managed under close supervision to learn the scientific methodology. This enabled him for over a decade to publish numerous papers on his subject that, despite his belief, were based on the evidence and thus questioned the value of acupuncture. Once he had left my department, White was allowed to work unsupervised. He seems to have then abandoned critical thinking, and he published articles with predominantly positive conclusions.

This striking contrast requires an explanation. It might mean that while under my supervision White published reliable evidence and when working unchecked during the second period, his pro-acupuncture bias got the better of him. In this first explanation, his "ideological" bias was so strong and durable that it re-emerged as soon as it was left unchecked.

However, there is another possibility. According to a second explanation, White did not dare tell the truth while working for me and, only after being liberated, was he able to publish unbiased conclusions.

To decide which explanation is correct, we need to determine whether acupuncture is generally effective or not. Those who believe it is would probably favor the second explanation. Those who believe it isn't would prefer the first. Attempting to decide who is correct presents a dilemma: there are plenty of articles on acupuncture that suggest it is effective for a wide range of conditions (Wang et al. 2013); similarly, there are numerous papers that suggest the opposite (Colquhoun and Novella 2013). The former type of publication is usually written by researchers such as White who might be criticized (by skeptics) for their pro-acupuncture bias. The latter type of article is often authored by skeptics who might be criticized (by acupuncturists) for not fully understanding the subject matter.

The solution could be to rely on reviews conducted by the Cochrane Collaboration. These are carefully designed to minimize bias, usually include acupuncturists among the authors, and are generally regarded as the most trustworthy evidence available. In June 2020, there were fifty-two Cochrane reviews of acupuncture. Of those, only two reached a positive con-

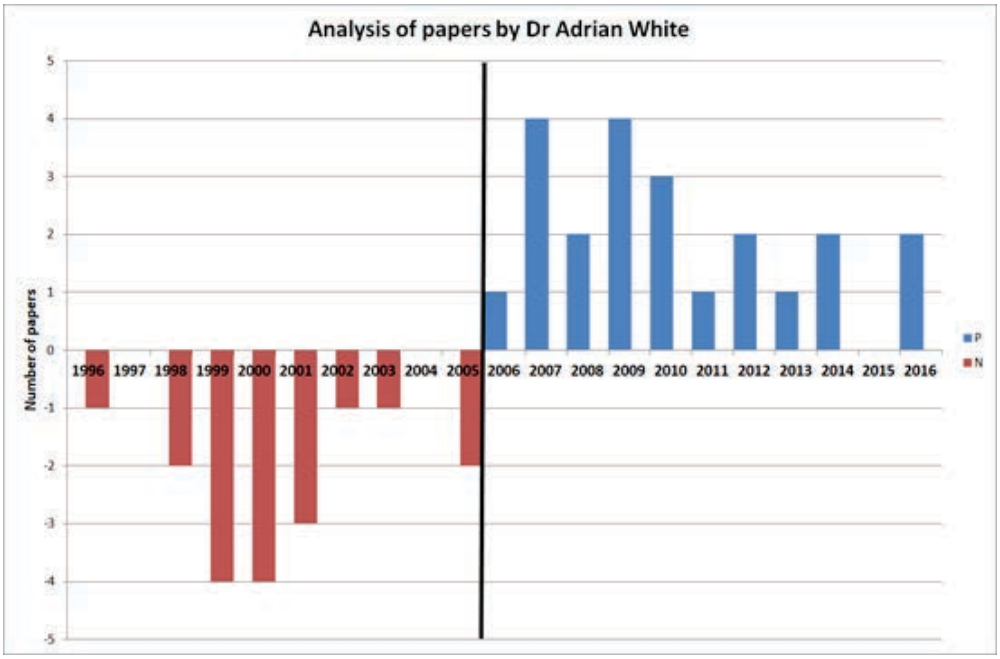

Figure 1: Negative conclusions (in red) were published exclusively between 1996 and 2005, and positive conclusions (in blue) were published exclusively thereafter.

clusion based on more than one high-quality primary study (Ernst 2020).

It is thus likely that the first explanation applies, and White's conclusions in the second part of his career did indeed lack critical input and were thus false-positive. There is further evidence for this assumption: in several articles (for instance, 5, 20, and 27 from the full list), White seems to spin an essentially negative finding into a positive conclusion. Moreover, he conducted a negative clinical trial of acupuncture for smoking cessation (49) while working with me and later published a positive review on the subject, seemingly distrusting his own study because it had not generated the result he had hoped for. Lastly, the second explanation would surmise that I have a strong anti-acupuncture bias. This is not the case and can easily be demonstrated by the existence of my systematic reviews that supported acupuncture when the totality of the best evidence was positive (Manheimer et al. 2005; Editors 2005; Ernst and Pittler 1998).

Of course, this analysis is merely a case study and therefore its findings are not generalizable. However, in my personal experience from twenty-five years of SCAM research, the described phenomenon is by no means an exception. On my blog (edzardernst.com), I regularly publish a growing list of SCAM researchers who managed the extraordinary feat of never publishing any negative conclusions about their specific SCAM; I've christened it "The Alternative Medicine Hall of Fame." As of January 2021, the list contains just seventeen names but is expected to grow steadily. "Ideological" conflicts of interest seem to have a more powerful influence in SCAM research than financial ones.

As the influence of ideological bias can be so dominant in SCAM, it is important to know about it. Consumers need to be aware when SCAM research originates from unreliable sources, and funders of SCAM research would be wise to stop supporting researchers who are prone to generating findings that are false-positive.

In the final analysis, research by hopelessly biased SCAM researchers is worse than no research at all. ·

Table 1. A Sample of Six Conclusions from Adrian White's Articles

[P = positive from the point of view of an acupuncture advocate; N = negative from the point of view of an acupuncture advocate]

1. The available evidence suggests that adding acupuncture to symptomatic treatment of attacks reduces the frequency of headaches. Contrary to the previous findings, the updated evidence also suggests that there is an effect over sham, but this effect is small. The available trials also suggest that acupuncture may be at least similarly effective as treatment with prophylactic drugs. Acupuncture can be considered a treatment option for patients willing to undergo this treatment. As for other migraine treatments, long-term studies, more than one year in duration, are lacking. (2016) P

2. 70% of those patients eligible to participate volunteered to do so; all participants had clinically identified MTrPs; a 100% completion rate was achieved for recorded self-assessment data; no serious adverse events were reported as a result of either intervention; and the end of treatment attrition rate was 17%. A phase III study is both feasible and clinically relevant. This study is currently being planned. (2010) P

3. Acupuncture appears to offer symptomatic improvement to some patients with fibromyalgia in a tertiary clinic who have failed to respond to other treatments. In view of its safety, further acupuncture research is justified in this population. (2007) P

4. Acupuncture is not superior to sham treatment for recovery in activities of daily living and health-related quality of life after stroke, although there may be a limited effect on leg function in more severely affected patients. (2005) N

5. Acupuncture has not been demonstrated to be efficacious as a treatment for tinnitus on the evidence of rigorous randomized controlled trials. (2000) N

6. It is therefore concluded that, according to the data published to date, the evidence that acupuncture is a useful adjunct for stroke rehabilitation is encouraging but not compelling. More and better trials are required to clarify this highly relevant issue. (1996) N

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Author photo credit: Nederlandse Leeuw

Less Than Nobel

Following an earlier SI article on "The Nobel Disease," a scientist and skeptic adds to the growing list of Nobel laureates who have taken a divergent view of science.

IAN BRYCE

Scientists are only human, and all humans are vulnerable to failings. I have been following with great interest such excursions from the norm for most of my life.

Scientific fraud is perhaps the most infamous example. Such is the pressure to get published that many results are rushed to print before (or without) the necessary diligence. Many examples have been reported in the pages of *The Skeptic* (Australian Skeptics) and Skeptical Inquirer.

But fraud is not the subject of this article. Here I will add a few cases in addition to those discussed in the "The Nobel Disease," the cover article in the May/June 2020 Skeptical Inquirer (Basterfield et al. 2020). That article chronicled Nobel laureates who embraced and clung to one or more decidedly "weird" idea with considerable conviction.

I will deal here with cases in which a scientist has veered a little off the beaten track but is still using the basic tools of science, where he or she develops a theory many would regard as weird and doggedly pursue it, often still using evidence and analysis.

The Nobel Prizes are arguably the highest recognition that a scientist can earn, and yet there are many Nobel laureates who have, later in life, turned to "screwball science." Why is that? Perhaps with their tenure assured and nothing to lose, they can finally pursue some far-out ideas they have been sitting on for decades. Or perhaps it takes that kind of left-field mentality to win a Nobel in the first place.

The cases discussed here focus on areas that have interested me—fertile fields, including the laws of physics and reality and consciousness. I have presented on several of these cases in my series of lectures grouped under Physics and the Big Questions.

Max Planck

The contributions made by Max Planck (1858–1947) to physics included the nature of the photon and the description of particles in terms of quantum mechanics. He worked with Einstein on relativity and the classical versus the quantum. He received the Nobel Prize in 1918.

Quantum mechanics holds that everything is represented by wave functions that have abstract and nonlocalized properties until a measurement is made that collapses them to a particular result.

Some interpret this as there being no underlying reality until a conscious mind decides to take a measurement. This perhaps led Planck in 1944 to say: "There is no matter as such! All matter originates and exists only by virtue of the existence of a conscious and intelligent Spirit. This Spirit is the matrix of all matter."

Max Planck, Nobel Prize winner in 1918.

It is odd to hear this from a scientist who was well aware that the universe had been around for billions of years before there was any life to provide a mind.

Sir John Eccles

A leading Australian neuroscientist, Sir John Eccles (1903–1997) explored the structure of the brain and the nature of the synapse, the junction between two long neurons. Eccles studied the stretch reflex in the human leg and believed that the signaling across the synapse was electric, as it is within the neuron. But most of his colleagues turned to the chemical (neurotransmitter) theory. Eccles designed experiments that finally showed it was chemical, thus falsifying his own

Sir John Eccles, Nobel Prize winner in 1963. Image courtesy of John Curtin School of Medical Research, Australian National University.Stuart Hay, ANU Photography. Karen Edwards, JCSMR - ANU.

theory, in the best Popperian sense. So far so good.

For this research, Eccles was awarded one-third of the Nobel Prize in Physiology or Medicine in 1963 for "fundamental contributions to the ionic mechanisms of synaptic transmission in the brain."

Having thus nicely capped his academic career, Eccles turned to a field that had obviously held his fascination all along—the science or perhaps the philosophy of the brain and consciousness. He proposed first World 1, the physical world we all know, which includes the brain. World 2 is consciousness and all mental processes. These two perhaps describe Descartes's dualism. Then Eccles adds World 3: objective knowledge, which includes scientific theories.

His Wikipedia page shows excerpts from his 1973 book *Understanding the Brain*, and they make fascinating reading. But in the 1990s, his theories got weirder. As Wikipedia puts it: "Eccles proposed that each of the 40 million dendrons in a brain is linked with a mental unit, or 'psychon,' representing a unitary conscious experience. In willed actions and thought, psychons act on dendrons and, for a moment, increase the probability of the firing of selected neurons through quantum tunneling effect in synaptic exocytosis, while in perception the reverse process takes place."

In my understanding of standard (materialist) physics, the psychon would have to be a new elementary particle to carry information into and out of the physical world. Materialists would complain this has several problems:

• There is no suggestion of it in the Standard Model of Particle Physics.

• There is no trace of it in particle accelerators, such as the Large Hadron Collider.

• All particles carry energy, which would be found missing (or in excess) in our material universe.

Was Eccles addressing a nonexistent problem, or was he exploring a real gap in science, which might point to new discoveries?

Sir Roger Penrose

Even as a student, Sir Roger Penrose (b. 1931) was fascinated by impossible geometrical objects, such as the Penrose triangle (see Figure 1). He inspired artist Maurice Escher to create geometrical illusions, such as *Waterfall*.

His contributions to physics included applying new mathematical techniques, such as tensors, to Einstein's general relativity. This yielded descriptions of a collapsing star and how it could form a black hole. This he taught to Stephen Hawking. Together (in the 1960s) he and Hawking made much progress, including how the reverse process could spawn a universe out of a singularity, better known as the "big bang."

Figure 1: Sir Roger Penrose was fascinated by impossible geometrical objects, such as the Penrose triangle.

But it wasn't until 2020, when Penrose was eighty-nine, that the Nobel committee awarded him one third of the Prize, with the motivation "for the discovery that black hole formation is a robust prediction of the general theory of relativity."

It is not clear why they waited fifty-five years; the Nobel is supposed to provide an active scientist with greater influence. Perhaps his other works cast doubts.

Meanwhile, Penrose's imagination was not idle. One branch of his work became more esoteric. His book *Shadows of the Mind: A Search for the Missing Science of Consciousness* (1994) promoted his theory that microtubules (tiny structural rods) within neurons support quantum superpositions. When the wave functions collapse, this provides consciousness, which is nonalgorithmic and transcends the limits of computability.

Scientists and Rossi's Cold Fusion

Apart from these Nobel laureates, there is a small group of reputable scientists worthy of mention who have added their imprimatur to one of the latest manifestation of fringe—*very* fringe—science, Andrea Rossi's E-Cat cold fusion (LENR, or low energy nuclear reactions). Some of these have associations with the Nobel awards and skeptical organizations.

In 2012, Rossi claimed cold fusion technology, attracting an estimated $30 million from investors. In *The Skeptic* and Skeptical Inquirer (May/June 2019), I exposed this as a likely trick, in which the earth wire was retasked to smuggle in extra power past the metering.

But before the exposé, no less than seventeen reputable scientists who witnessed demonstrations of Rossi's E-Cat gave positive endorsements. Nobel laureate Brian Josephson (see the "Nobel Disease" article), when asked whether it was possible that Rossi was just fooling people, replied: "Various people think that this is all a scam, but … he allows people to investigate it; they can decide what to measure, how to measure it, they can also look inside. [Rossi has shown] … clear evidence … in regard to the amount of energy it produces."

Among them were three senior NASA scientists who reported back to NASA that it worked. Dennis M. Bushnell wrote, "This is capable of, by itself, completely changing geo-economics, geo-politics, and solving climate and energy."

Two Swedish nuclear physicists who should have known better were Hano Essén and Sven Kullander. Essén is a Swedish theoretical physicist at the Royal Institute of Technology in Stockholm. He has been a president of the Swedish Skeptics Society, sister of Australian Skeptics Inc (ASI) and of the Center for Inquiry/Committee for Skeptical Inquiry. Essén had read Rossi's reports and commented favorably. Sven Kullander (d. 2014) was an experienced nuclear physicist and published some ideas of his own on cold fusion. He was chairman of the Energy Committee of the Swedish Royal Academy of Sciences, which is involved in awarding Nobel Prizes.

As professors of nuclear physics, these two were invited by Rossi to view an E-Cat demonstration on March 29, 2011. Given the backgrounds of both Rossi and his claims, one wonders why they became involved at all.

They observed carefully and critically and provided a detailed report (Kullander and Essén 2011). They could see no hidden pipes or wires that could explain the ongoing energy production. This was widely published, along with media statements including: "My belief [was] probably … strengthened considerably when I saw and measured how it all works, that there is an energy release far beyond what one might expect."

To properly evaluate the measurements and investigate the theory, they set up an informal reference group at a meeting in Sweden on July 4, 2011, which included other scientific authorities from Uppsala University in Sweden and a professor of physics from Osaka University in Japan.

This authoritative endorsement soon had the blogosphere buzzing with expectations of solving the world's energy problems. Rossi started offering franchises for licensing around the world. Investors were queuing at Rossi's doorstep.

To date, Rossi continues to promote his LENR technology without coming any closer to proof that it works … but with much critical analysis indicating it doesn't.

Perhaps distinguished scientists need to seek the advice I was given by skeptical magicians: scientists are the easiest to fool, because nature does not set out to mislead; and you can be fooled by something hiding in plain sight. ·

Reply to Bridgstock: A Note Added in Proof

A third article on "The Nobel Disease" appeared in *The Skeptic* (Australia) in March 2021, titled "Not So Sick." Martin Bridgstock, a long-time skeptical investigator and activist as well as a scientist and academic, challenged the conclusions of Basterfield et al. in their original article and in my follow-up article as well. In particular, as I understand it, Bridgstock points out that the scientists mentioned constitute only 3 percent of the total Nobel winners in science. He also suggests that some of those listed do not fit the definition of clinging to "weird ideas with considerable conviction." And third, he says more research and analysis would be needed to reach a conclusion.

My own opinion is that the Nobel prizes in science are intended to acknowledge significant discoveries resulting from rigorous scientific research. Thus, we hold the winners in special esteem and afford them possibly the highest regard, certainly above scientists in general. Their pronouncements relating to sciences (as opposed to political views) retain great interest, even later in life, regardless of statistics. So, when they propose hypotheses outside conventional science, many people take notice. Perhaps it points the way to further productive research, which will ultimately reveal whether the ideas are substantiated or not. Either way, their ideas are challenging and entertaining.

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Luck, Life, and Poker

Arthur S. Reber

The Biggest Bluff: How I Learned to Pay Attention, Master Myself, and Win. By Maria Konnikova. London: Penguin Press, 2020. ISBN 978-0525522621. 352 pp. Hardcover, $28.00.

Okay, the first question the reader should be asking is "Why is a book on poker being reviewed in Skeptical Inquirer?" Followed by "Why is it being reviewed by a psychologist?" And then "What does he know about poker?"

Let me answer in reverse order. I've been a poker player all my life. I've cashed in several WSOP (as in World Series of Poker) tournaments with buy-ins (your entry fee before you can sit down to play) of $1,000 and up. I've won more than a few smaller events in poker rooms on both coasts and, until we got sidelined by COVID-19, played in a regular "home" game with some pretty sharp opponents.

The answer to the second is Konnikova has a PhD in psychology from Columbia University, where she worked with Walter Mischel, one of the more influential social psychologists of the past half-century, and psychological issues run through every aspect of this book. I've also written a longer and more technical review of the book for the *American Journal of Psychology*.

The answer to the first question is simple. Konnikova understands the complex interplay between skill and luck and is clear on the fallacy of how luck gets "reified" and treated as though it were some mysterious "thing" that one can have (for a time) or not (for a time) rather than what it is: a statistical necessity that plays a role in virtually every interesting thing that people do—including playing poker.

The book is a story told, a tale of how she went from a complete naïf (she'd never played poker before and didn't know how many cards are in the deck) to becoming a professional player in one year. She started with a shrewd move: linking up with Erik Seidel to be her mentor. Seidel is one of the best poker players of all time and has amassed over $38 million in tournament winnings (no, that's not a typo) and routinely plays in tournaments with entry fees in the hundreds of thousands of dollars (neither is that). They meet, chat, text, phone, and "sweat" each other (watch a friend play). Remarkably, within one year Konnikova has won a major international tournament, is signed up as a sponsored player by a major website, and—as the title suggests—comes to know a lot about herself she didn't know when beginning this adventure.

What is most relevant in the world of the skeptic is Konnikova's approach to luck, karma, kismet—whatever you want to call it—both in poker and life at large. Life is a "game" of partial information. You only know some of what is going on, only a few of the factors that cause events occurring around and to you. Poker, often described as a microcosm of life, is also a game of partial information. You know your two hole cards and the five common cards dealt on the board. You do not know what your opponent(s) have and must use all available information to make the optimal decisions—never forgetting that each hand is going to turn on that statistical, mathematically calculable factor: the luck of the draw, the fortune of the turned card.

A surprising number of people believe that luck is something real, something that can be cultured with just the right rituals or avoiding just the wrong ones. The number thirteen is considered unlucky (many hotels don't have a thirteenth floor). In China and Japan, it's four, and many buildings don't have a fourth floor. Of course, there really are such floors, but they've been assigned different numbers—which makes you wonder whether it's the numeral or some "four-ness" quality that carries the "bad luck."

Konnikova's focus is on the extent to which people act on these beliefs and what the consequences are. If you think you're "due" to fill a flush because you've missed on the past six draws, you will have no chance at poker. Cards have no memories. They do not "know" that you're "running bad"—and they don't care.

I suspect that a good part of Konnikova's rapid rise comes from her psychology background. Her dissertation was on the paradoxical effect that individuals who have high levels of confidence in their abilities often misunderstand the extent to which positive outcomes are due not to their own

I suspect that a good part of Konnikova's rapid rise comes from her psychology background.

abilities but to the vagaries of life—to chance. She found that these individuals, the ones with high self-esteem who are generally more successful than those with low self-esteem, actually perform more poorly when the conditions have a significant element of chance. Because they are used to being in control of most daily situations, they tend to underestimate the role statistical, noncausal fluctuation actually plays.

The research is within what's known as "attribution theory." To what do people attribute the causes of the events around them? Do they tend to take responsibility for success and blame for failure? Do they attribute outcomes to chance or the actions of others? In poker, you need to be highly skilled but not fall prey to a misattribution. You can make the right decisions and still fail. As Konnikova wisely puts it, "Nothing is all skill," and those who fail to appreciate this often find themselves handicapped by their misplaced attributions—in poker and life.

Can she keep it up? Poker is jokingly called an easy way to make a tough living. Playing in the world of tournament poker means being on the road, living out of hotel rooms away from family. Before this voyage, she had cadged a pretty good gig—staff writer for *The New Yorker*—so she does have fallback if she needs it. ·

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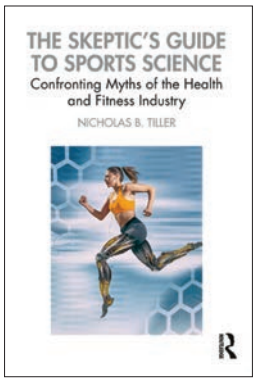
Critical Thinking about Sports

Harriet Hall



The Skeptic's Guide to Sports Science: Confronting Myths of the Health and Fitness Industry. By Nicholas Tiller. Abingdon, United Kingdom: Routledge. 2020. ISBN: 978-1138333130. 222 pp. Paperback, $31.96.

I found the title of *The Skeptic's Guide to Sports Science: Confronting Myths of the Health and Fitness Industry* a bit misleading. I was expecting to find a list of sports myths debunked by scientific evidence, but what I found was much better. It does debunk several sports-related myths, but the majority of the book is devoted to providing a very valuable education in critical thinking. It inspires readers to look for the evidence behind any claim they hear and develop an appreciation for "the true knowledge and wonder that science can afford."

Nicholas Tiller starts by explaining that evolution hardwired us for heuristic thinking because of the survival advantage. Heuristic thinking uses mental shortcuts and allows us to ignore certain bits of information. It is practical for making quick decisions but does not guarantee that our decisions are optimal—or even correct. He quotes Bertrand Russell on the times when instinct and reason conflict: "Instinct … is liable to error. Those in whom reason is weak are often unwilling to admit this as regards to themselves, though all admit it in regard to others."

We seek "one quick fix," quick rewards, and instant gratifications; we enthusiastically buy into any ergonomic aid that promises to enhance performance by mechanical, psychological, physiological, or nutritional means. Runners who want to shave seconds off their best times find it much easier to buy expensive new running shoes (that accomplish nothing) than to reevaluate running styles and training programs (which might really do something to improve their performance times). And then there's tribalism, the instinctive pleasure we derive from belonging to a group, such as the group that owns the latest bike or magic bracelet.

False advertising? Tiller shows how regulatory efforts have failed, how the Dietary Supplement Health and Education Act of 1994 (DSHEA) undermined the work of the Federal Drug Administration, and how "post-truth era" thinking and social media have made it harder than ever to distinguish fact from fiction.

Failures in education? Critical thinking skills are seldom taught in our schools. The internet has given us access to a flood of data, outstripping our ability to interpret it. As Tiller says, "information is not knowledge."

Clever marketing? He describes how supermarkets employ clever marketing techniques that use our psychology and biases to influence our buying decisions.

The internet has given us access to a flood of data, outstripping our ability to interpret it.

They manipulate us into "not thinking too much." The same techniques are used to sell sports products.

Tiller is optimistic that people can learn to collate meaningful data, filter it for validity, and reach coherent evidence-based conclusions. As a teaching exercise, he asks his students to consider how they made a decision about a significant financial investment, what research strategies they used, and how they collected as much information as possible from a variety of sources. Contrast that with how willingly they believe whatever a coach or trainer tells them, without asking questions or doing any research of their own. He gives examples of how even well-trained scientists are biased, especially about claims outside their own areas of expertise. Sometimes there is evidence to support both sides of a heated debate, but the evidence is insufficient to reach a consensus; once a scientist has chosen sides, tribal bias kicks in. As an experiment, Tiller tried to design three products that were superficially plausible but ill-conceived and unlikely to be effective. He discovered that "no matter how far-fetched the idea or how tenuous the science underpinning it, an equivalent product was already on sale." In fabricating a bogus sales pitch, he was struck by how easy it was—and how much fun.

Tiller tries to explain valid and invalid reasons for buying a product. Among the invalid reasons: appeal to popularity, jargon that sounds like science but isn't, appeal to antiquity, argument from authority, appeal to nature, ambiguous or vague language, celebrity endorsements, false dichotomy, confusing correlation with causation, and the appeal to anecdote (the plural of anecdote is anecdotes, not data).

The book warns about the slippery slope: pseudoscience breeds pseudoscience. He lists red flags: claims that commit logical fallacies, products sold on testimonials or anecdote, alternative medicine, emotive language, multiple claims, and lack of prior plausibility. There is a whole chapter on how to evaluate research and what to look for when reading a paper. Another chapter explains the appeal of placebo products and the power of perception.

Tiller discusses the contentious world of sports nutrition, decrying fad diets, superfoods, juicing, and detox regimens. He stresses that *unhealthy foods* don't exist. The media routinely distort information about nutrition. A notorious study claiming that chocolate helps people lose weight was a real (although seriously flawed) study that was actually a sting designed to test how the media would report a study with questionable results from a fake research center by an uncredentialed researcher published in a bogus journal; the news media failed the test miserably.

For many years, we thought moderate drinkers lived longer than non-drinkers, but the research was flawed and doesn't actually back up that claim. Evidence is lacking for claims that organic foods are more healthful. Fructose is not inherently worse than sugar, and "detox" is a myth.

Dietary supplements? Usually not helpful, and they sometimes have fatal consequences. Many are mislabeled or contaminated with prescription drugs and prohormones. Food is better.

Fat-burning supplements are deceptively marketed. Recommendations for protein intake ignore important factors. Sports drinks are long on claims but short on evidence. Novel training programs and products must be tested. He also quotes Sherlock Holmes: "It is a capital mistake to theorize before one has data: insensibly one starts to twist facts to suit theories instead of theories to suit facts."

Barefoot running? Much of the research was done on people who habitually wear shoes; barefoot runners develop different techniques. High altitude training? The devil is in the details; there are caveats and confounders. Power bracelets are useless trinkets, and nasal strips have subjective effects only. Complementary and alternative medicine? Based on belief, not evidence. Non-evidence-based practices include cupping, Reiki, acupuncture, Traumeel, yoga, cryotherapy, and chiropractic.

This book covers a lot of territory that is covered elsewhere, but approaching critical thinking in the context of sports is new and useful. It should be particularly helpful to those who have been misled by sports myths and misinformation or who have unquestioningly accepted whatever a trainer, coach, or friend told them. One of the most telling anecdotes in the book is about a scientist friend (who should have known better) who is firmly convinced of the truth of a claim but admits she has not looked at the scientific literature.

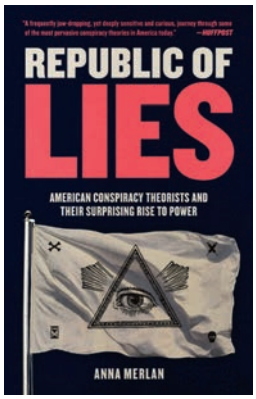
I learned some fascinating bits of trivia. I knew Coca-Cola's original formula contained cocaine, later replaced by caffeine. But there was more to the story. After a legal battle, the originally high caffeine content was decreased *by court order*. Today's product does actually contain coca, but the psychoactive alkaloid is removed at a heavily guarded chemical processing facility in New Jersey. Who knew?

Tiller's information is accurate and supported by references, and his treatise on critical thinking is brilliant. I had only two quibbles: he misspells James "The Amazing" Randi's name as "James Rhandi," and he likes to insert hyphens where they are not needed (critical-thinking, ad-campaign, far-exceeded, etc.). ·

Harriet Hall, MD, often called "the SkepDoc," is a contributor to *Science-Based Medicine* and a contributing editor and columnist for the Skeptical Inquirer.

What's Going On with the Country?

Peter Huston



Republic of Lies: American Conspiracy Theorists and Their Surprising Rise to Power. By Anna Merlan. New York: Metropolitan Books (Henry Holt and Company), 2019. ISBN 978-1250231277, 288 pp. Softcover, $17.99.

Last summer, the PBS *Frontline* documentary *United States of Conspiracy* aired. This excellent program described important changes in our nation that led to the unpredicted, poll-defying election of a media personality with no political or public service experience, a long string of allegations of fraud, at best lackluster business accomplishments, and little respect or interest in using education or expertise in decision making. Anna Merlan, author of *Republic of Lies*, was among those featured. Her important book documents how conspiracy theories and their believers have moved from being light entertainment to a national threat.

Merlan starts by sharing her experiences on a journalist assignment covering "Conspira-Sea," a 2015 weeklong "conspiracy cruise." Her week on a ship full of people who were absolutely certain that incredible things were happening just out of sight, events were connected just outside of public consciousness, alternative explanations outside of the media reporting were what was truly important, and that these things were on the cutting edge of understanding. Soon, they believed, the public would become aware of and see the truth of the things they believed now.

Ho hum. If you read the Skeptical Inquirer, you've probably read things like this before.

But she soon began to notice that the ideas, people, and institutions she'd learned of on the conspiracy cruise were seemingly invading her mainstream journalism assignments. For instance, she stumbled across self-identified "journalists" from Alex Jones's Infowars, one of the largest, most dangerous, and most notorious conspiracy mongers and promoters in the nation, while covering the 2016 Republican National Convention. Conspiracy theories, such as Obama "birtherism," were part of right-wing discourse and Trump's rise to prominence. Of course, conspiracy theories have always been part of American culture, and they exist on all parts of the political spectrum, more so at the ends. "But while conspiracy theories are as old as the country itself," she writes (8), "there is something new at work: people who peddle lies and half-truths have come to prominence, fame, and power as never before."

In Chapter 1, "False times," she shares more of what is happening, how it came to pass, and where it appears to be going. "Conspiracy theories tend to flourish especially at times of rapid social change, when we're reevaluating ourselves, and, perhaps, facing uncomfortable questions in the process" (15). She notes that a prominent thread in many or most conspiracy theories is that they depict a world in which there is a great hidden and not-so-hidden continuous battle between the forces of good and evil, with the conspiracy theorists pushing these ideas firmly convinced they are on the side of good, exposing evil. She ties this in with the history of the United States and its heavy influence by founders from strongly religious groups. She mentions Jesse Walker's *The United States of Paranoia*, a work I reviewed previously in these pages (March/April 2015).

Merlan's descriptions reminded me of Ted Daniels's *A Doomsday Reader: Prophets, Predictors, and Hucksters of Salvation* (1999, New York University), a work that describes and gives examples of a widely spread culturally, globally, and historically diverse "mono-myth" that "some day, some day soon, great and terrible events will happen, big changes will follow, the evil people will be punished for being evil, and the good people, people like us, will be rewarded for being good."

As she writes:

> That sense of fragility and distrust are particularly noticeable again in the mid-2000s, huge swaths of people feel locked out of the political process, not even bothering to vote out of a belief that it won't make a difference. We have a stunning and increased lack of social mobility, a profound distrust of "elites and those in power," as well as a persistent fear of "outsiders" and "others" taking what we see as limited resources. Combined with deep inequalities of race and class, all that makes for an

environment that's unusual outside of repressive countries with authoritarian regimes and state-run media.

Merlan describes how much of the modern right wing feels that America has largely been taken away from them and their kind. She notes that there is a distinct class element among conspiracy thinking, most prevalent among lower income, lower educated people.

One chapter focuses on conspiracy thinking among the African American population. Why do many African Americans falsely believe that the U.S. government purposely detonated the levees in New Orleans during Hurricane Katrina in 2005 with the intent to flood African American neighborhoods? In large part it's because, according to Merlan, during the 1927 Great Mississippi Flood, the authorities did exactly that, choosing to flood African American neighborhoods to prevent expected flooding of the white neighborhoods. And any discussion of African American belief in conspiracy theories must include mention of the FBI's COINTELPRO program and the Tuskegee experiment. Merlan also discusses the spread of various conspiracy theory elements through hip-hop music, something most whites rarely notice.

Of particular interest to traditional skeptics and longtime readers of this publication will be Chapter 9, "The Politics of UFOs." While giving a good overview of conspiracy-type beliefs within the UFO community, Merlan notices a distinct and important shift within its more extreme members. In decades past, the bulk of prominent UFO believers thought they were doing cutting edge scientific research or were about to find hard evidence that the scientific community would not be able to deny. The focus was on finding and sharing evidence of current, ongoing alien visitation and offering the proof. (For insight into why this did not happen, simply read back issues of this magazine.)

But things have changed, Merlan says. UFOlogy's current focus, she reports, are people who claim to have had access to special knowledge of what is "really" going on, alleging personal participation in hidden government programs that supposedly dealt firsthand with aliens, now coming forth to share their revelations. Often these allegedly firsthand reports make no real attempt to offer proof; some are constructed in such a way that proof is impossible. This is distinctly different from UFOlogy's traditional, clumsy attempts at doing science. The UFO community, Merlan writes, is now increasingly discussing *secret* projects of the *hidden* government, often tied in with bizarre reports of Obama birtherism and other conspiracy theory elements. (On page 203, Merlan shares that Andrew Basiago, a program speaker at the 2017 MUFON conference she attended, told attendees that as a child he was allegedly part of a secret mission to Mars accompanied by Barack Obama using his "foreign student name" of Barry Soetoro.) This shift in focus on style of claim has caused a great change within MUFON, an organization that traditionally claimed to be scientific in nature.

Merlan's book discusses the possibility that some of these conspiracies may be and undoubtedly are true. For instance, the Russians did indeed interfere in the 2016 election and are indeed working to spread conspiratorial thinking, something many conservatives tried to dismiss. She also discusses the way Russian "troll farms" and bots, masquerading as social media accounts, use the anti-vaccination movement and other issues not just to spread harmful ideas but to intensify and emotionalize Americans' responses and increase social friction. She also mentions QAnon—the pro-Trump cult-like belief system based in conspiracy thinking—Pizzagate, and others. Although a 2019 publication, this work is well worth reading to understand what is happening now. ·

Peter Huston, a former journalist and author of several books, has contributed to this publication since 1992. Three of his books are on skepticism and paranormal claims: *Scams from the Great Beyond*, *More Scams from the Great Beyond*, and, most recently, *Scams from the Great Beyond—The Presidential Edition*. Huston lived in Asian for six years and has two graduate degrees, one in Asian studies, the other in ESL Education. His MA thesis was on the history of paleontogy in China. He's currently researching Chinese pre-scientific concepts and wacky ninja claims in his spare time and lives in upstate New York.

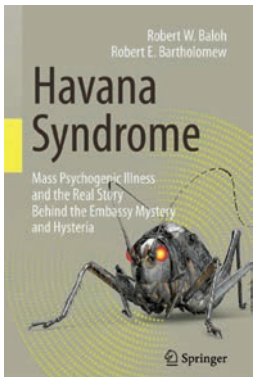
A Skeptical Take on 'Havana Syndrome'

Benjamin Radford

Reports coming out of Cuba in 2016 were bizarre, mysterious, and alarming: American diplomats in Havana were under attack by a terrifying and powerful—yet invisible—enemy. Victims complained of headaches, dizziness, nausea, and fatigue; some suffered debilitating memory and concentration problems, while others reported hearing loss and tinnitus. The only clue about its origin was that a high-pitched sound was heard at the time. The attacks were, understandably, taken seriously by the State Department; complaints were lodged against China and Russia as Cuban diplomats were expelled from the United States.

The cause of the maladies, and perhaps more importantly who was behind the attacks, was promptly investigated. Neuroscientists at the University of Pennsylvania discovered concussion-like symptoms that, they claimed, had damaged victims' brains. The cause was "an unknown energy source." Soon, other seemingly similar incidents were reported, ostensibly verifying the original reports. In 2017 and 2018, for example, a diplomat in an embassy in China reported identical symptoms. Investigations were launched but found no clear evidence of any attack.

What really happened is the topic of the new book *Havana Syndrome: Mass Sociogenic Illness and the Real Story behind the Embassy Mystery and Hysteria*, by Robert Baloh and Robert Bartholomew. Dr. Baloh is in the Department of Neurology at the David Geffen School of Medicine at UCLA, and Bartholomew is a prolific author and at the Psychological Medicine Department at the University of Auckland in New Zealand. (Full disclosure: I have coauthored two books with Bartholomew.)


Robert W. Baloh
Robert E. Bartholomew
Havana Syndrome
Mass Psychogenic Illness and the Real Story Behind the Embassy Mystery and Hysteria
Springer

Havana Syndrome: Mass Sociogenic Illness and the Real Story behind the Embassy Mystery and Hysteria. By Robert W. Baloh and Robert E. Bartholomew. Berlin: Springer, 2020. ISBN 978-3-030-40746-9. 210 pp. Available in softcover, $17.99, and ebook.

The authors make a strong case that mass sociogenic illness (MSI, sometimes called mass hysteria) is a likely culprit and that while this case seems strange and sensational, it's far from unique:

> Many psychogenic outbreaks have involved victims who attributed their symptoms to sound waves. … In fact, *concussion-like symptoms* have been reported in American soldiers returning home from every major conflict since modern doctors began keeping tabs on troops, from World War I to the fighting in Iraq and Afghanistan.

The clinical diagnoses offered in support of a sonic weapon explanation are more subjective than they first appear; while a broken leg or bullet wound can be discretely verified as a hard outcome, many of the "concussion-like symptoms" are not so easily quantified and validated.

Skeptics noted that sound, per se, cannot physically cause the concussions reportedly found. According to the authors:

> [Scientists] were baffled as to how diplomatic staff situated deep within a hotel or in the confines of a house could be targeted. Human hearing ranges between approximately 20 and 20,000 Hertz (Hz). Sounds below 20 Hz are known as infrasound [and] have been difficult to weaponize due to the inability to focus the wavelengths. The main effect on human health is irritation. Sounds at the high end of the spectrum of human hearing is ultrasound [and] are equally difficult to control as they dissipate rapidly as they travel. Even if the sound waves were to reach a building in an effort to target people inside, most of the waves would bounce harmlessly off the walls before reaching their target.

The clinical diagnoses offered in support of a sonic weapon explanation are more subjective than they first appear.

Though scientifically defensible, the sociogenic conclusion was politically and socially untenable. If there were no attacks, then what was going on? What about all the witnesses and evidence? One reason diagnoses of mass hysteria are often rejected and disputed by those affected is because of the common misunderstanding that these events are

Though scientifically defensible, the sociogenic conclusion was politically and socially untenable.

imaginary, faked, or fraudulent; they are not. A diagnosis of MSI doesn't mean that anyone is pretending or malingering; it merely means that the illness has an internal (psychological and physiological), not an external (environmental) source.

Baloh and Bartholomew write:

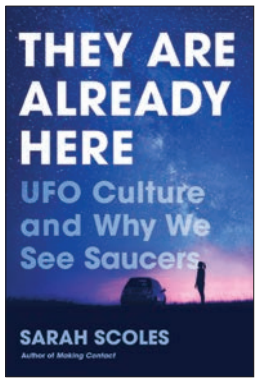
> This is the story of how much of the world came to believe in something that never happened. It is an extraordinary tale of international intrigue, flawed science, political ineptitude, and the mating habits of two most unlikely suspects: crickets and cicadas. While parts of the story border on the comical and at times are absurd, this saga has had far-reaching diplomatic repercussions as the fear and mistrust it has sown has threatened to undermine the future of Cuban-American relations.

The book provides a fascinating timeline of the strange events and their aftermath, from political finger-pointing to medical investigations. Conclusive and definitive explanations are not always possible due to a lack of information and myriad other factors. It's certainly possible that, years or decades from now, the intelligence community will discover proof that some unknown sonic weapon was in fact deployed against the embassy in Havana. But until then, *Havana Syndrome* (together with Occam's Razor) makes a compelling case that mass sociogenic illness is a plausible explanation. ·

Benjamin Radford was coauthor, with Robert Bartholomew, of an analysis of the role of mass hysteria in the 1997 Pokémon cartoon seizure panic published in the *Southern Medical Journal* in February 2001.

UFO Believers: A Sympathetic Look at Tangled Connections

Terence Hines



They Are Already Here: UFO Culture and Why We See Saucers. By Sarah Scoles. New York: Pegasus Books, 2020. ISBN 978-1-64313-305-8. 248 pp. Hardcover, $27.95.

Science journalist Sarah Scoles's book can be divided into three sections. The first covers the background of the story that military pilots had taken videos of flying saucers in 2004, videos that became known as the Tic Toc videos. Then there is a short section on the Mutual UFO Network (MUFON), which blends nicely into a long final section on Area 51 and other UFO pilgrimage sites. Each section of the book makes contributions to the skeptical understanding of what is behind parts of modern UFO mythology.

This is not a debunking book. Scoles's approach is sympathetic to, and she clearly enjoyed interacting with, the characters she met while working on the book. The book starts with a description of a very impressive almost–UFO experience she had while researching the book. This event helped her understand how people can find such experiences so compelling as evidence for some sort of inexplicable phenomenon.

The first section contains important information on one of the biggest UFO stories of the 2010s. This was the claim that military fliers had captured video images of flying saucers back in 2004. A credulous *New York Times* story on December 16, 2017, by Helene Cooper, Ralph Blumenthal, and Leslie Kean reported the event. None of the authors were science journalists. Blumenthal had written a 2013 piece that suggested that UFO abductions were real. Kean was a UFO promoter. Cooper was a *Times* Pentagon correspondent who had previously written extensively on trade and foreign policy. The article revealed a top-secret military program called the Advanced Aerospace Threat Identification Program (AATIP) that ran from 2007 to 2012 to investigate UFOs. The story was "all but a declaration not just that UFOs are extant, but also that they are extraterrestrial. They have landed, the Pentagon knows about them, and they may have measurable effects on human beings" (11). Scoles tells the full story of the origins of AATIP and some of the people behind it.

The story starts with Robert Bigelow, a wealthy cut-rate hotel businessman and a major donor to Henry Reid, Nevada Senator from 1987 to 2017. Bigelow had a serious interest in UFOs and all things paranormal. In 1995, he created the National Institute for Discovery Science (NIDS), which was to investigate everything from "UFOs to the possibility that consciousness sur-

vives death … with real scientists, real instruments, real experiments" (83). One of the "real scientists" that Bigelow put on the NIDS advisory board was Harold Puthoff, who had been conned by Uri Geller years previously. In 1996 or 1997, Bigelow purchased the Skinwalker (or Sherman) Ranch in Ballard, Utah, an area known for being a hotbed of paranormal and UFO activity. Despite all the serious investigative equipment and expertise brought to the ranch, nothing paranormal was ever found. Bigelow gave up this line of investigation in 2004.

About the same time, Bigelow spoke to Senator Reid about his interest in UFOs. Reid "thought the government should be studying those [UFOs]" and "pushed a potential project forward" (11), which resulted in the AATIP with a funding of $22 million. Most of this money went to the Bigelow Aerospace Company.

So UFO believer Bigelow was behind the creation of the AATIP and profited from it. Another company founded by some of the same people involved in Bigelow's operations was the To the Stars Academy of Arts and Sciences. Harold Puthoff was the vice president for science and technology. The Academy had as one of its goals to investigate fringe science and UFOs. Scoles found that many of the sources for the *Times*' December 16 story on UFOs were from or associated with the Academy.

In the second section, Scoles delves into one of the largest contemporary UFO organizations, the Mutual UFO Network. She interviewed MUFON officials and attended their meetings. Scoles emphasizes the problems with UFO sightings and eyewitness reports—problems of memory and perception familiar to readers of this journal. She has insight about the love/hate relationship that organizations such as MUFON, and UFOlogy in general, have with science. UFOlogists reject the rigid standards of proof required by real science,

> [but] they seek [the scientific establishment's] approval and revere its authorities: When someone with a PhD or a study in a peer-reviewed journal nods at UFO research or extraterrestrial visitation, many UFOlogists say, essentially, "See?" When a symposium speaker has worked for NASA or had a metal sample tested by a university professor, they say, "So you know it's legit." (118)

In the third section, Scoles visits several famous (and not so famous) UFO sites. It is in this section that the book tends to wander a bit and lose focus. These four chapters give a feel for the culture of the UFO enthusiasts who populate these places. Scoles makes an important point about the motives of UFO enthusiasts: "People also sometimes feel compelled to chase wonder, because the world doesn't have many surface-level mysteries left" (142). *Surface-level* is a key term here. There are many mysteries left, but to address them, one needs at least some degree of scientific training, which many (most?) of these wonder seekers lack or reject.

Area 51 is first on the list of sites visited. At one point, Scoles and a friend test the security of the area by approaching, at night, the base's boundary beyond which "lethal force" is apparently authorized. A few guards turn on their SUV's headlights. But that's all that happens, and "it's all very underwhelming" (139). That pretty much sums up the entire visit. Next is Roswell. There are good descriptions of the people in town who cater to the UFO crowds. Scoles clearly labels the Roswell story a myth and says that UFO beliefs persist in part because UFO enthusiasts have been given "a precious gift: unfalsifiability" (155), such that if a UFO report is not explained, it must be true and, conversely, if it is explained, that explanation is part of a cover-up, so the report is also true.

Chapter nine is the about a bizarre event that took place at the Sunspot Solar Observatory in New Mexico in September 2018 when it was discovered that the observatory grounds were deserted. Much speculation, amateur investigation, and conspiracy-theory mongering ensued. The "official" explanation was that a janitor at the observatory had been using one of the computers there for child pornography. He had apparently made violent threats, so the grounds were cleared for safety reasons. But was that *really* what was going on? Was the place shut down because of … aliens? Conspiracy theorists think so.

The UFO Watchtower in the San Luis Valley in Colorado, about 200 miles south-southwest of Denver, is the subject of the penultimate chapter. This seems to be UFO central at the moment. It opened in 2000 and "draws thousands of believers, skeptics, agnostics, spiritualists, self-proclaimed psychics, and antagonists each year" (193). The chapter gives the reader a revealing and amusing glimpse into the goings on at the Watchtower, the personalities involved, and the history of the place.

In the final section, Scoles focuses on Gerrit Verschuur, a radio astronomer who doubts that UFOs are alien spacecraft or that extraterrestrial civilizations exist at all. After smoking marijuana, going into sensory deprivation tanks, and hearing voices, he came to believe that UFOs and aliens represent some sort of Jungian myth where humans project "our own image onto the universe" (225). So "they are already here" in the minds of believers and even nonbelievers. This is not a particularly useful conclusion, and the fifteen pages devoted to Verschuur are far too many.

The value of the book lies in the first section where the relationships between Robert Bigelow, the AATIP, and the authors of the *New York Times* story on the 2004 military UFO videos are revealed. The rest of the book is certainly interesting as a look into the psychology of MUFON and UFO believers. ·

Terence Hines is professor of psychology at Pace University and author of *Pseudoscience and the Paranormal*. He is a CSI fellow.

Remembering Randi

Your marvelous tribute to James Randi ("Remembering Randi," January/February 2021) unfortunately did not mention one of his magnificent contributions to the world of science. In 1988, the French researcher Jacques Benveniste published a scientific paper in the renowned journal *Nature* that appeared to support the concept of homeopathy. John Maddox, *Nature*'s editor-in-chief, asked Randi to join the team visiting the lab of Benveniste to carefully study the experiments supporting these very controversial findings. After a few of the first series turned out somewhat positive, Randi designed three more double-blind experiments and ensured the codes were kept secret by wrapping them in tinfoil and taping them to the ceiling! Benveniste agreed with the designs. This time no effects were found. Naturally, Benveniste refused to accept the findings.

Eleven years later, Brian Josephson, a physics professor at Cambridge, challenged the American Physical Society (APS) to scientifically test the claims again, and the APS accepted the challenge. Randi threw in his famous million-dollar prize. His offer was rejected because he was deemed "unqualified," not being a real scientist, a quite common response of conceited academicians. After that, it remained eerily silent, and the experiments were never conducted. The Amazing Randi demonstrated again how bright people may be blind to other, more mundane explanations once they become believers in their own theories.

Roland Gerritsen van der Hoop, MD, PhD
Exton, Pennsylvania

I never got to meet James Randi, but he has been a great positive influence on my life.

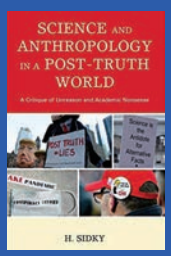
My college-age self was browsing in a local bookstore many years ago when I came upon the book *Flim-Flam!* It seemed interesting, so I bought it and read it. Its author made me understand that people can and do lie in print, and it—and the fact that I was a bit of an amateur conjuror already—made me a skeptic. Several years afterward, I bought the updated Prometheus Books edition and realized—after reading Randi's foreword to the

Erratum

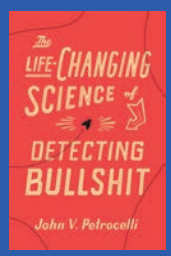
In the March/April 2021 SI, we failed to provide credits for two images. The image on p. 34 should have been credited to Julian Leshay/Shutterstock.com. The image on p. 35 should have been credited to M. Moira/Shutterstock.com.

NEW AND NOTABLE]

Listing does not preclude future review.



SCIENCE AND ANTHROPOLOGY IN A POST-TRUTH WORLD: A Critique of Unreason and Academic Nonsense. H. Sidky. Thanks to a combination of postmodernist academics who discount truth or reliable knowledge and a Trump presidency that fomented falsehoods and lies, Americans now live in a post-truth era characterized by fake news, weaponized lies, alternative facts, conspiracy theories, magical thinking, and irrationalism, says anthropologist Sidky. In this timely work, he examines how French philosophers such as Foucault, Derrida, and Latour fomented this forceful assault on science and truth and how Donald Trump, right-wing populists, and religious extremists then took this irrationality into whole new realms of public policy. Sidky brings new insights to science studies, the Sokal hoax, American intellectuals' efforts to delegitimize science, relativism, how we know what we know, and postmodern anthropology. Chapters of special interest to our readers include "The Problem of Pseudoscience in Post-Truth America" and "Paranormal and Theistic Anthropology." Rowman & Littlefield/Lexington, 2021, 240 pp., $100.



THE LIFE-CHANGING SCIENCE OF DETECTING BULLSHIT. John V. Petrocelli. This book is the ultimate consumer protection guide—how to protect ourselves from the bullshit, utter nonsense, lies, distortions, conspiracy thinking, and disinformation swirling all about us. John Petrocelli is an experimental psychologist and professor (at Wake Forest University) who studies bullshit, and his book is clear and blunt: If we are to avoid falling victim to the BS, we must learn how to recognize and decisively bury it using scientific reasoning and critical thinking to seek evidence and truth. St. Martin's Press, 2021, 326 pp., $28.99.

—Kendrick Frazier

new edition—that my hardcover copy was a relatively rare book because only 5,000 copies were printed. I was hoping at some point to meet Randi and have him sign it for me, but of course that cannot happen now.

I own several other books by Randi—as well as a small library of other Prometheus Books titles—and have been a subscriber to Skeptical Inquirer for more than thirty years due in no small part to James Randi setting me on this path. I salute him and his memory and hope, as he did, that science and reason will win out in the end.

Martin Zumsteg
Jackson, New Jersey

In the mid-1970s, the experts at the Stanford Research Institute, and other scientists elsewhere, supported the ESP abilities of Israeli psychic Uri Geller. Barbara Walters, at the time one of the leading journalists in the United States, was completely convinced Geller was real.

And so was I—until I read a modest little paperback with the title *The Magic of Uri Geller*. After reading the book, I concluded that, no matter how many scientists he convinced, Geller was a fraud.

By the way, the book was written not by a scientist but by a high-school dropout from Canada who called himself James "The Amazing" Randi.

A few years later, nuclear physicist Stanton Friedman told us UFOs were, in fact, alien spacecraft. By then I had become a charter subscriber to *The Zetetic*, soon renamed the Skeptical Inquirer. Writers such as Joe Nickell and Philip J. Klass didn't have Friedman's scientific credentials, but they convinced me UFOs are a great many things, but alien spacecraft is not one of them.

Just last year, public health experts first told us that using face masks against COVID-19 was useless, even dangerous. But forty years of James Randi and SI had taught me to think for myself. I decided that an imperfect barrier to viral aerosols was better than no barrier at all, and eventually the experts came around to my view of the matter.

Gandalf is gone. We men and dwarves will have to carry on the fight without him.

Taras Wolansky
Kerhonkson, New York

Conspiracy Theories

I was disappointed in Joseph Uscinski's article on conspiracy theories ("Clear Thinking about Conspiracy Theories in Troubled Times," January/February 2021). While his definition of a conspiracy is on target, I can agree only with two of his conclusions: that conspiracy theories can be very troublesome and that there are conspiracy theories about everything. Other than that, it seems to me that recent events suggest he is off base in suggesting that conspiracy theories haven't gone up in recent decades and that they just don't have that much of an effect on people.

While I have not conducted any polls, seeing the hordes of people, including representatives in Congress, responding violently to theories of a stolen election, noting references to "deep state" involvement, and hearing claims of child massacres being a government ploy suggest that conspiracy theories are growing and becoming much more nefarious. It is not helpful to deny that. There has been no increase in theories about birtherism or about JFK's assassination, but we now have numerous conspiracy theories about the election, Biden's health, and so on *ad infinitum*. As for whether they have an effect on people, just ask the survivors of the attack on Congress and on our democracy on January 6, a day that will live in infamy.

Peter Lantos
Lafayette Hill, Pennsylvania

I am generally persuaded by the arguments presented by Joseph Uscinski, but "conspiracy theory" exists on a continuum of plausibility, so whether or not an individual espouses one or more theories is not simply binary.

For example, the Mueller investigation uncovered more than 140 instances of collusion with Russia or agencies allied to it. This was not judged to amount to a conspiracy provable in court, but it is not irrational to suppose that a real conspiracy might have existed, particularly as testimony could not be obtained from some of those centrally involved and in view of the obsequious behavior of the Trump administration toward Russia. Kennedy assassination conspiracy theories might not have seemed plausible had Oswald not been killed before he could be properly questioned. Neither of these is in the same category as QAnon or alien wreckage, and putting them under the one umbrella does not seem to be justified.

Whether or not the real Russian interference changed many minds may be hard to quantify accurately, but, even if its success was small, the 2016 election hinged on a remarkably small number of votes in a few states. It could still have had a crucial impact just by damping voter enthusiasm in some groups or raising it in others.

Gerry McClelland
San Marcos, California

Joseph Uscinski writes about truth deniers and conspiracy theorists and concludes that the common opinion—that the number holding such views is increasing and that there are more right wingers among them—is incorrect. He bases these conclusions on his own polls.

These conclusions are flawed. True, individuals with such ideas have always existed on both the left and right. However, that is irrelevant. What troubles the media and public is not their existence. Our concerns rather

involve the election of such individuals to higher and higher political offices. Yesterday it was a local sheriff. Today it's the president. Moreover, such elected officials are overwhelmingly Republicans. Yet Uscinski never asks why Republicans nominate and vote for their reality-challenged fans, but Democrats do not.

Furthermore, Uscinski's comments on QAnon are unsound. He admits that they are scary but also unpopular, so not a threat. Yet even one such elected official can be dangerous. A short time ago, Tea Party members were dismissed as buffoons. Today, they are mainstream Republicans.

Finally, the article maintains that there is nothing right wing about QAnon. I first heard of QAnon during the 2016 presidential campaign. Is Uscinski unaware that the designated witch-in-chief of its fancied pederast/child pornography conspiracy, then and now, is Hillary Clinton? Not right wing? Really?

Al Holtzer
St. Louis, Missouri

I found the beginning of Joseph Uscinski's article very informative, but toward the end there was plenty of evidence that Uscinski knew what his polls reported but not the topic he was polling when he wrote, "When we poll on QAnon, we find that very few people like it. But we also find that equal numbers of Republicans and Democrats claim to support it."

A recent Pew Research poll found that eight in ten Democrats who have heard of QAnon find it bad for this country; one in ten say only somewhat. For

Republicans, one in four say it's bad for this country while an equal number say it's somewhat bad. The specific question in the Pew Poll that seemed to be at odds with a finding in Uscinksi's SI article was phrased as "Do you think QAnon is a …" and then the respondent would select from a drop down. These are relative ratios, meaning they're normalized against magnitude. Surely this result has some merit even with the risk of panel conditioning.

I have seen GIFs of swinging gallows following Democratic defeats and JPEGs of crosshairs on Democratic leaders and read the rantings of QAnon's base on various less-than-reputable websites. While you may be able to find a self-described Democrat claiming to be in support of QAnon, the numbers are nowhere near equivalent.

I am not arguing that QAnon is on the rise; I am merely concerned that the SI article reported that Democrats support QAnon as much as Republicans. This message is farcical.

Uscinski engages in false equivalences about the subjective comparison of modern conspiracies with past conspiracies. Coronavirus conspiracies are harmful because they are used to flout science-based guidance that saves lives.

David Johnson
Edina, Minnesota

Joseph Uscinski responds:

It's easy to believe that our political opponents are a bunch of kooky conspiracy theorists. It's also easy to believe that people are more conspiracy minded than ever before. That's why my talk to CSI and this article it was based on wasn't about conspiracy theories per se but rather the misconceptions about them. I argued that we should not rely on our animosity toward our political opponents or on clickbaity headlines to understand conspiracy beliefs. Just as there are scientific methods for studying other topics, there are scientific methods for understanding who believes what and why. I have found that people are often very unscientific when it comes to determining what tens of millions of people—whom they don't know and have never met—believe and why.

If conspiracy beliefs were increasing, we would expect polls to show that beliefs are higher now than in the past. But I don't find this, even with QAnon. Also, if QAnon were believed more on the right, we would expect polls to consistently show this (as with climate change conspiracy theories). But the polls are mixed—and more important, partisanship and ideology are not significant predictors of QAnon belief once we account for other factors. This makes sense given that QAnon rhetoric attacks Democrats, Republicans, and Hollywood celebrities. The poorly executed polls about QAnon, which happen to have the most sensational results, get the most news traction, and unfortunately people often grab on to the one survey—no matter how poorly done—if it tells them what they want to believe.

As I have long expressed, conspiracy beliefs can detrimentally influence actions, and when politicians use conspiracy theories, those harms multiply. But that doesn't mean that everyone believes every conspiracy theory they encounter. And just because Trump and other leaders engage in conspiracy theories doesn't mean that everyone believes conspiracy theories more now than in the past. The undermining of democracy by Trump should be condemned, as should the Capitol riot. However, rather than through some "bottom up" process in which the masses became more conspiracy minded, the riot and the voter fraud beliefs associated with it were "top down," driven by President Trump and his allies in Congress and their media. My talk reported the conclusions of careful data collection and analysis; if the evidence changes, then my conclusions will too. But misunderstanding the prevalence, causes, or influence of conspiracy theories does nothing to help us combat their harmful effects.

Skeptics and Government

As a longtime skeptic who's subscribed to your journal for what must be thirty years, I was on the verge of writing to thank you for the article on James Randi, whose picture from his presentation at the National Capital Area Skeptics get-together years ago I still have on my office wall. Or maybe the fine articles on, for example, "The COVID-19 Free Market Experiment" (both in January/February 2021). But then I read the letters to the editor in that issue. And I want to thank you for responding to a few people who whined that you'd become "political" by challenging the entity in the White House at the time.

Among my curiosities of a few too many skeptics is their reluctance to get, well, "political." As a lifelong activist—now elderly, therefore "high risk" of COVID-19 infection—who lives spittin' distance from the nation's capital, I often challenge fellow skeptics that, effectively, *everything* is political. And, as I infer from your response to those who are critical of your politicality, what antiscience and health-threatening irresponsibility of the (now former) regime is not "political."

Indeed, it extends to emails frequently received by our friends at *Skeptics Guide to the Universe*: a few weeks ago, when the Putin-asset's COVID-19 irresponsibility was raised ever so lightly, audience members complained that they're getting "partisan."

Hmmm. A person in an extremely powerful position, who takes less responsibility for anything than someone still enrolled in a daycare center would take … the same person who threatens the nation's democracy, making claims to which all the evidence indicates the opposite …

And it's wrong—"political"? "partisan"?—to challenge that person, even as a skeptic?

Am I missing something?

Thanks again for challenging those who purport to be skeptics or even "educated" who are afraid of challenging that which must be challenged.

Timothy P. Scanlon
Hyattsville, Maryland

Two readers were clearly outraged by Kendrick Frazier's denunciation of Donald Trump and his cronies in an earlier editorial commentary.

Advocacy of science and reason is the mission of the Committee for Skeptical Inquiry and its flagship magazine. Hence, it's entirely appropriate for the editor to criticize public figures whose behavior is antithetical to this goal.

As a longtime SI subscriber, I would say that the overwhelming majority of readers appreciated the editor's thoughtful rebuke of the (now former) president's ongoing irrational behavior.

While it would not be feasible to catalog all of Donald Trump's irresponsible statements, it may be useful to review a few of his blatantly antiscientific assertions and actions:

- He declared that global warming was a "Chinese hoax," rejecting the scientific consensus on climate change, and he withdrew the United States from the Paris accords.
- He said that the coronavirus was a "little flu" that would "magically disappear" or "miraculously go away," when he knew it was actually a deadly disease.
- At a news conference with the coronavirus task force, he recommended an unproven drug and asked if injection or ingestion of household disinfectants could kill the virus.
- He repeatedly claimed that he really won the 2020 presidential election but was denied victory because of massive voter fraud, even though his attorney general said it wasn't true.
- In fact, neither Trump nor his deluded loyalists ever presented one shred of documentation supporting the fraud charges, offering only unsubstantiated allegations that were rejected more than fifty times by courts.

Further evidence of Donald Trump's disdain for scientific

truth comes from his cronies, an assortment of quacks, charlatans, and supremacists that he appointed to inform his decisions with their "expertise." Just three examples of many:

• His first national security adviser promoted a bizarre Satanic pedophilia/sex trafficking conspiracy theory. (He subsequently admitted lying to the FBI and suggested that Trump declare martial law.)

• His presidential counselor and spokesperson formulated the unscientific concept of "alternative facts."

• His economic adviser lectured the public on infectious disease research methodology. (He later wrote a report summarizing false 2020 election fraud allegations.)

There are many more examples.

Donald Trump's disturbed thinking was an insult to the American people, most of whom expect their leaders to be careful and accurate in making scientific statements and rely on legitimate experts from relevant disciplines.

It can be concluded that Kendrick Frazier was fully justified in criticizing the former president and his advisers for behavior that is inimical to the values of science and rationality.

Brian Bolton
Georgetown, Texas

Scott Lilienfeld's Humility

The death of Scott O. Lilienfeld (obituary, January/February 2021) shocked me like no other since the death of Carl Sagan. Scott was one of the most generous people I've ever known. He was a mentor to me and let me consult with him on many occasions about academics and clinical work—no matter how busy he was. Even though his schedule was packed, he wrote a superb recommendation when I was considered for a campus scholarship award (I was named recipient—largely due to his letter).

I was most moved by his absolutely *superb* article on intellectual humility (SI, September/October 2020), in which he urged skeptics to adopt such humility as a unifying principle. Anyone who has not read it, please do so. The article reminded me of the 1996 World Skeptics Congress in Buffalo when CSI Founder Paul Kurtz urged a "kinder, gentler" skepticism. I've never known anyone to be such an advocate for science and empirical validation yet be as gentle in the process as Scott. He concludes the intellectual humility article thusly: "If our analysis has merit, all skeptics should strive to inculcate a thoroughgoing sense of intellectual humility in themselves and others and avoid the tempting allure of intellectual arrogance." I will not only take this to heart but will use it as a guiding message for the rest of my professional career.

Bryan Farha
Oklahoma City, Oklahoma

In regard to Lilienfeld's article on intellectual humility, here's a mental trick inspired by James "The Amazing" Randi. I have taken to heart his reminder that "You can be fooled." There is a certain irony to embracing this idea, and perhaps it reveals a penalty of intellectual corruption to the egotist (and we all have egotism to some greater or lesser degree). If you are too egotistical and believe that you can never be fooled, then you will be less likely to check to see if you are being fooled and, hence, be more susceptible to being fooled. Contra this, if you have intellectual humility and consciously maintain the concept that "I can sometimes be fooled," then by having this skeptical perspective as one of your many analytical tools, you will be open to the possibility of being fooled, and therefore less likely to be fooled.

Although I am not an expert in any field, it's my impression that, of all people, experts should be the ones most likely to realize what they do not know about their specific field and therefore recognize their limitations.

I believe there is a "Goldilocks zone" in skepticism that lies in between belief and doubt: where you are both skeptical about why you should believe a proposition and skeptical about why you should *not* believe the proposition. From here you allow the data to point to a conclusion, even if it disagrees with your hypothesis.

Gary McDermott
Chittenango, New York

Bible Is Many Things

I agree with Robert Saunders's letter supporting evolution (January/February 2021), but I have issues with some of his statements. For one thing, I and virtually all physicists would take umbrage at his assertion that evolution is "the only scientific theory that is provably correct." Indeed? What about the many well-supported theories in physics and chemistry? And what does "provably correct" even mean in empirical science?

There is much more to be said here, but my main issue is with the statement that "the Bible is fiction." This sounds to me like either polemics or ignorance of what the Bible really is. The Bible is not one thing; it is a collection of many genres written over a period of around 1,000 years. There are poems, folklore, legends, philosophical speculation on origins, ethics, history, pseudo-history, letters, sermons, dreams, visions, etc. And yes, there is fiction, as in the tale of Esther. To say that the Bible is fiction is to buy into the fundamentalists' assertion that it is literally true, even if you are asserting that such a view is wrong. The point is that the "fact or fiction" argument regarding the Bible is completely off base. Creationists are wrong not just because their science is wrong but also because their biblical scholarship is wrong! If you enter the debate on the "fact or fiction" basis, you are wrong too.

Charles E. Hawkins
Fort Thomas, Kentucky

[FEEDBACK

The letters column is a forum on matters raised in previous issues. **Letters should be no longer than 225 words.** Due to the volume of letters we receive, not all can be published. Send letters as email text (not attachments) to letters@skepticalinquirer.org. In the subject line, provide your surname and informative identification, e.g.: "Smith Letter on Jones evolution article." Include your name and address at the end of the letter. You may also mail your letter to the editor to 944 Deer Dr. NE, Albuquerque, NM 87122.

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Perseverence Rover's View from Surface of Mars

NASA's Mars *Perseverance* rover acquired this image on March 25, 2021 (Sol 33), using its onboard Left Navigation Camera (Navcam). The camera is located high on the rover's mast and aids in driving. *Perseverance*, launched July 30, 2020, landed successfully on Mars on February 18, 2021, to great excitement and acclaim back on Earth. Over the next year, it will be exploring what seems to be an ancient river delta near its landing site in the twenty-eight-mile-wide Jezero Crater, just north of the Martian equator.

IMAGE CREDIT: NASA/JPL-CALTECH